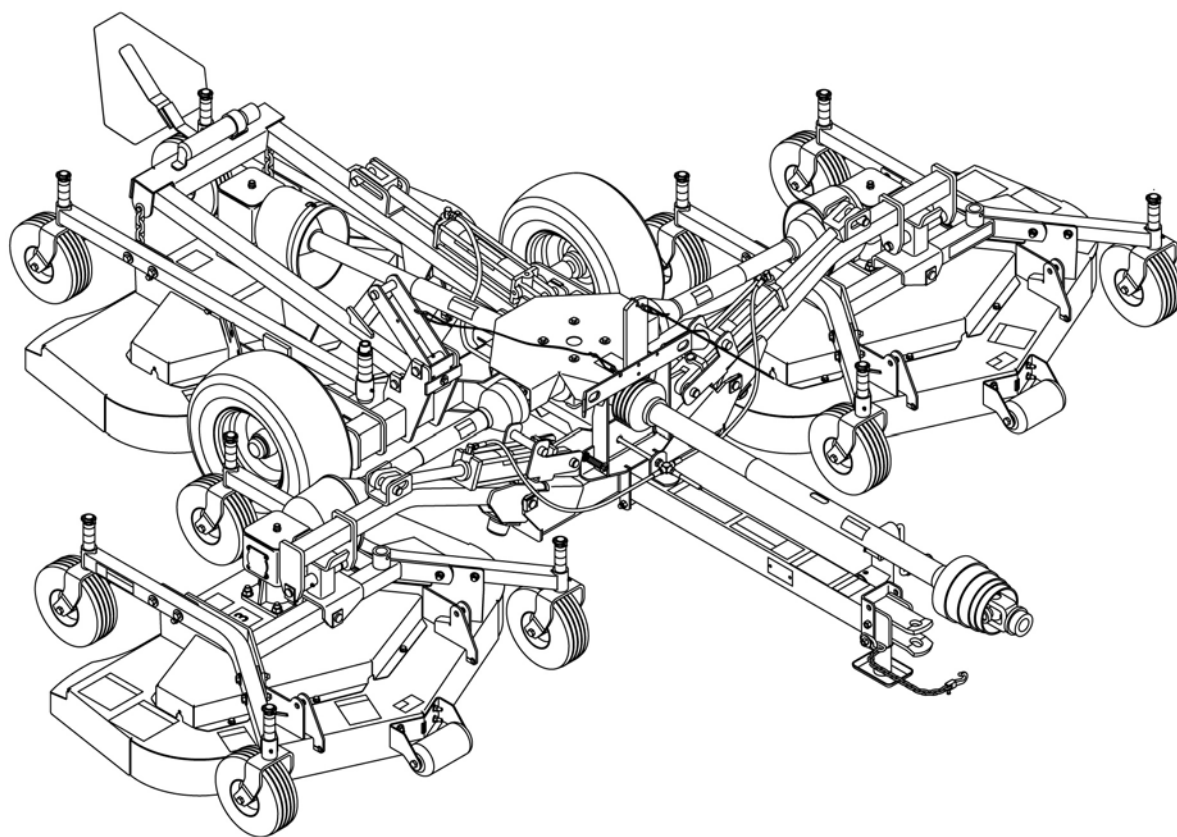


# WOODS

# TURF BATWING®

## TBW150C



**MAN0765**  
(Rev. 01/18/2010)

**WOODS®**

OPERATOR'S MANUAL

## TO THE DEALER:

Assembly and proper installation of this product is the responsibility of the Woods® dealer. Read manual instructions and safety rules. Make sure all items on the Dealer's Pre-Delivery and Delivery Check Lists in the Operator's Manual are completed before releasing equipment to the owner.

**The dealer must complete the Product Registration online at the Woods Dealer Website** or complete the mail-in form included with the Operator's Manual. If using the mail-in form, the dealer is to return the prepaid postage portion to Woods, give one copy to the customer, and retain one copy. **Failure to register the product does not diminish customer's warranty rights.**

## TO THE OWNER:

Read this manual before operating your Woods equipment. The information presented will prepare you to do a better and safer job. Keep this manual handy for ready reference. Require all operators to read this manual carefully and become acquainted with all adjustment and operating procedures before attempting to operate. Replacement manuals can be obtained from your dealer. To locate your nearest dealer, check the Dealer Locator at [www.WoodsEquipment.com](http://www.WoodsEquipment.com), or in the United States and Canada call 1-800-319-6637.

The equipment you have purchased has been carefully engineered and manufactured to provide dependable and satisfactory use. Like all mechanical products, it will require cleaning and upkeep. Lubricate the unit as specified. Observe all safety information in this manual and safety decals on the equipment.

For service, your authorized Woods dealer has trained mechanics, genuine Woods service parts, and the necessary tools and equipment to handle all your needs.

Use only genuine Woods service parts. Substitute parts will void the warranty and may not meet standards required for safe and satisfactory operation. Record the model number and serial number of your equipment in the spaces provided:

**Model:** \_\_\_\_\_ **Date of Purchase:** \_\_\_\_\_

**Serial Number: (see Safety Decal section for location)** \_\_\_\_\_

Provide this information to your dealer to obtain correct repair parts.

Throughout this manual, the term **NOTICE** is used to indicate that failure to observe can cause damage to equipment. The terms **CAUTION**, **WARNING**, and **DANGER** are used in conjunction with the Safety-Alert Symbol (a triangle with an exclamation mark) to indicate the degree of hazard for items of personal safety.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.



Indicates a hazardous situation which, if not avoided, will result in death or serious injury.



Indicates a hazardous situation which, if not avoided, could result in death or serious injury.



Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

**IMPORTANT  
or NOTICE**

Is used to address practices not related to personal injury.

**NOTE**

Indicates helpful information.

**WOODS®**

**ALITEC™**  
**BMP®**  
**CENTRAL FABRICATORS®**  
**GANNON®**  
**GILL®**  
**WAIN-ROY®**  
**WOODS®**

## 2 Introduction

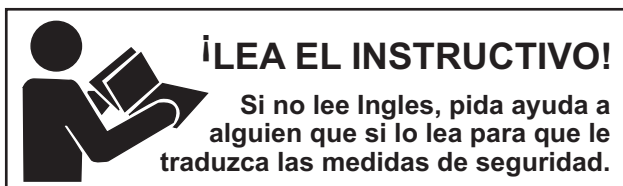
Gen'I (Rev. 2/19/2008)

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## SPECIFICATIONS

Cutting Width	12.5'
Cutting Height Range	1.0" - 4.5"
Shipping Weight (Approximately)	2,035 lbs.
Blade Speed (feet per minute)	16,200
Blade Spindles	9
Number of Blades	9
Universal Drive Series	(Input: ASAE Cat 3 CV; Wing: ASAE Cat 3)
Transport Wheels	20.5" x 8.75" Turf tire and Wheel
Caster Wheels	4" x 10" Solid (10)
Tractor PTO Speed	540 rpm
Recommended Minimum Tractor Horsepower	25 - 60 hp



**This Operator's Manual should be regarded as part of the machine. Suppliers of both new and second-hand machines must make sure that this manual is provided with the machine.**

# GENERAL INFORMATION



## WARNING

■ Some illustrations in this manual show the equipment with safety shields removed to provide a better view. This equipment should never be operated with any necessary safety shielding removed.

The purpose of this manual is to assist you in operating and maintaining your Turf Batwing Mower. Read it carefully. It furnishes information and instructions that will help you achieve years of dependable performance. These instructions have been compiled from extensive field experience and engineering data. Some information may be general in nature, due to unknown

and varying operating conditions. However, through experience and these instructions, you should be able to develop procedures suitable to your particular situation.

The illustrations and data used in this manual were current at the time of printing. However, due to possible inline production changes, your machine may vary slightly in detail. We reserve the right to redesign and change the machines as may be necessary without notification.

Throughout this manual, references are made to right and left direction. These are determined by standing behind the tractor facing the direction of forward travel. Blade rotation is clockwise as viewed from the top of the mower.

---

## NOTES



# SAFETY RULES

**ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**



Safety is a primary concern in the design and manufacture of our products. Unfortunately, our efforts to provide safe equipment can be wiped out by an operator's single careless act.

In addition to the design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, judgement, and proper training of personnel involved in the operation, transport, maintenance, and storage of equipment.

It has been said, "The best safety device is an informed, careful operator." We ask you to be that kind of operator.

## **TRAINING**

■ **Safety instructions are important! Read all attachment and power unit manuals; follow all safety rules and safety decal information. (Replacement manuals and safety decals are available from your dealer. To locate your nearest dealer, check the Dealer Locator at [www.WoodsEquipment.com](http://www.WoodsEquipment.com), or in the United States and Canada call 1-800-319-6637.) Failure to follow instructions or safety rules can result in serious injury or death.**

■ **If you do not understand any part of this manual and need assistance, see your dealer.**

■ **Know your controls and how to stop engine and attachment quickly in an emergency.**

■ **Operators must be instructed in and be capable of the safe operation of the equipment, its attachments, and all controls. Do not allow anyone to operate this equipment without proper instructions.**

■ **Keep hands and body away from pressurized lines. Use paper or cardboard, not hands or other body parts to check for leaks. Wear safety goggles. Hydraulic fluid under pressure can easily penetrate skin and will cause serious injury or death.**

■ **Make sure that all operating and service personnel know that if hydraulic fluid penetrates skin, it must be surgically removed as soon as possible by a doctor familiar with this form of injury or gangrene, serious injury, or death will result. CONTACT A PHYSICIAN IMMEDIATELY IF FLUID ENTERS SKIN OR EYES. DO NOT DELAY.**

■ **Never allow children or untrained persons to operate equipment.**

## **PREPARATION**

■ **Check that all hardware is properly installed. Always tighten to torque chart specifications unless instructed otherwise in this manual.**

■ **Air in hydraulic systems can cause erratic operation and allows loads or equipment components to drop unexpectedly. When connecting equipment or hoses or performing any hydraulic maintenance, purge any air in hydraulic system by operating all hydraulic functions several times. Do this before putting into service or allowing anyone to approach the equipment.**

■ **Route hydraulic hoses carefully to prevent damage. Hoses must not be twisted, bent sharply, kinked, frayed, pinched, or come into contact with any moving parts. Operate moveable components through full operational range to check clearances. Replace any damaged hose immediately.**

■ **Make sure all hydraulic hoses, fittings, and valves are in good condition and not leaking before starting power unit or using equipment. Check and route hoses carefully to prevent damage. Hoses must not be twisted, bent sharply, kinked, frayed, pinched, or come into contact with any moving parts. Operate moveable components through full operational range to check clearances. Replace any damaged hoses immediately.**

■ **Always wear relatively tight and belted clothing to avoid getting caught in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head; and respirator or filter mask where appropriate.**

■ **When attaching a pull-type unit to the tractor drawbar, always use a high-strength drawbar pin. The drawbar pin must have a device that will lock it into position. Secure safety chain to attachment and tractor.**

■ **Make sure attachment is properly secured, adjusted, and in good operating condition.**

■ **Make sure spring-activated locking pin or collar slides freely and is seated firmly in tractor PTO spline groove.**

■ **Make sure driveline guard tether chains are attached to the tractor and equipment as shown in the pamphlet that accompanies the driveline. Replace if damaged or broken. Check that driveline guards rotate freely on driveline before putting equipment into service.**

*(Safety Rules continued on next page)*



# SAFETY RULES

**ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**



*(Safety Rules continued from previous page)*

■ Before starting power unit, check all equipment driveline guards for damage. Replace any damaged guards. Make sure all guards rotate freely on all drivelines. If guards do not rotate freely on drivelines, repair and replace bearings before putting equipment into service.

■ Power unit must be equipped with ROPS or ROPS cab and seat belt. Keep seat belt securely fastened. Falling off power unit can result in death from being run over or crushed. Keep foldable ROPS system in “locked up” position at all times.

■ Inspect chain shielding before each use. Replace if damaged.

■ Remove accumulated debris from this equipment, power unit, and engine to avoid fire hazard.

■ Make sure all safety decals are installed. Replace if damaged. (See Safety Decals section for location.)

■ Make sure shields and guards are properly installed and in good condition. Replace if damaged.

■ A minimum 20% of tractor and equipment weight must be on the tractor front wheels when attachments are in transport position. Without this weight, front tractor wheels could raise up resulting in loss of steering. The weight may be attained with front wheel weights, ballast in tires or front tractor weights. Weigh the tractor and equipment. Do not estimate.

■ Inspect and clear area of stones, branches, or other hard objects that might be thrown, causing injury or damage.

■ Never attach the mower release rope to the operator, the operator's clothing, or the tractor seat.

■ Make test turns, both left and right. Check that both the hydraulic hose and the mower transport lock release rope do not become taut or caught on any parts of the tractor or mower.

## TRANSPORTATION

■ The maximum transport speed for towed and semi-mounted machines is 20 mph (32 km/h). Regardless of the maximum speed capability of the towing tractor, do not exceed the implement's maximum

transport speed. Doing so could result in:

- Loss of control of the implement and tractor
- Reduced or no ability to stop during braking
- Implement tire failure
- Damage to the implement or its components.

■ Use additional caution and reduce speed when under adverse surface conditions, turning, or on inclines.

■ Never tow this implement with a motor vehicle.

■ Always raise unit and install transport locks before transporting. Leak down or failure of mechanical or hydraulic system can cause equipment to drop.

■ Always comply with all state and local lighting and marking requirements.

■ Never allow riders on power unit or attachment.

■ Do not operate PTO during transport.

■ Do not operate or transport equipment while under the influence of alcohol or drugs.

## OPERATION

■ Only engage power when equipment is at ground operating level. Always disengage power when equipment is raised off the ground.

■ Do not allow bystanders in the area when operating, attaching, removing, assembling, or servicing equipment.

■ Never walk, stand, or place yourself or others under a raised wing or in the path of a lowering wing. Hydraulic system leak-down, hydraulic system failures, mechanical failures, or movement of control levers can cause wings to drop unexpectedly and cause severe injury or death.

■ Full chain shielding must be installed when operating in populated areas or other areas where thrown objects could injure people or damage property.

- If this machine is not equipped with full chain shielding, operation must be stopped when anyone comes within 300 feet (92 m).
- This shielding is designed to reduce the risk of thrown objects. The mower deck and protective devices cannot prevent all objects from escaping the blade enclosure in every mowing condition. It is possible for objects to ricochet and escape, traveling as much as 300 feet (92 m).

■ Never direct discharge toward people, animals, or property.



# SAFETY RULES



**ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**



- Do not operate or transport equipment while under the influence of alcohol or drugs.
- Operate only in daylight or good artificial light.
- Keep hands, feet, hair, and clothing away from equipment while engine is running. Stay clear of all moving parts.
- Make sure driveline guard tether chains are attached to the tractor and equipment as shown in the pamphlet that accompanies the driveline. Replace if damaged or broken. Check that driveline guards rotate freely on driveline before putting equipment into service.
- Never allow riders on power unit or attachment.
- Power unit must be equipped with ROPS or ROPS cab and seat belt. Keep seat belt securely fastened. Falling off power unit can result in death from being run over or crushed. Keep foldable ROPS system in “locked up” position at all times.
- Always sit in power unit seat when operating controls or starting engine. Securely fasten seat belt, place transmission in neutral, engage brake, and ensure all other controls are disengaged before starting power unit engine.
- Operate tractor PTO at 540 RPM. Do not exceed.
- Connect PTO driveline directly to power unit PTO shaft. Never use adapter sleeves or adapter shafts. Adapters can cause driveline failures due to incorrect spline or incorrect operating length and can result in personal injury or death.
- Do not operate mowers on terrain that raises mowers beyond 25 degrees. Exceeding this design limit will result in U-joint “knocking noise” and potential driveline failure and could cause driveline to pull apart.
- Look down and to the rear and make sure area is clear before operating in reverse.
- Do not operate or transport on steep slopes.
- Do not stop, start, or change directions suddenly on slopes.
- Use extreme care and reduce ground speed on slopes and rough terrain.
- Watch for hidden hazards on the terrain during operation.
- Stop power unit and implement immediately upon striking an obstruction. Dismount power unit, using proper procedure. Inspect and repair any damage before resuming operation.

- Always connect safety chain from equipment to towing vehicle when transporting.

## MAINTENANCE

- Before dismounting power unit or performing any service or maintenance, follow these steps: disengage power to equipment, lower the 3-point hitch and all raised components to the ground, operate valve levers to release any hydraulic pressure, set parking brake, stop engine, remove key, and unfasten seat belt.
- Before performing any service or maintenance, disconnect driveline from tractor PTO.
- Before performing any service or maintenance, lower equipment to ground or block securely, turn off engine, remove key, and disconnect driveline from tractor PTO.
- Before servicing blades, raise and lock mower in transport position, turn off engine, set parking brake and remove key.
- Do not modify or alter or permit anyone else to modify or alter the equipment or any of its components in any way.
- Your dealer can supply original equipment hydraulic accessories and repair parts. Substitute parts may not meet original equipment specifications and may be dangerous.
- To prevent contamination, clean and then cover hose ends, fittings, and hydraulic ports with tape.
- Do not allow bystanders in the area when operating, attaching, removing, assembling, or servicing equipment.
- Make sure attachment is properly secured, adjusted, and in good operating condition.
- Keep all persons away from operator control area while performing adjustments, service, or maintenance.
- Frequently check blades. They should be sharp, free of nicks and cracks, and securely fastened.
- Do not handle blades with bare hands. Careless or improper handling may result in serious injury.
- Your dealer can supply genuine replacement blades. Substitute blades may not meet original equipment specifications and may be dangerous.

*(Safety Rules continued on next page)*



## SAFETY RULES

**ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**



*(Safety Rules continued from previous page)*

- Tighten all bolts, nuts, and screws to torque chart specifications. Check that all cotter pins are installed securely to ensure equipment is in a safe condition before putting unit into service.
- Make sure all safety decals are installed. Replace if damaged. (See Safety Decals section for location.)
- Make sure shields and guards are properly installed and in good condition. Replace if damaged.
- Do not disconnect hydraulic lines until engine is stopped, power unit is properly secured, equipment and all components are lowered to the ground, and system pressure is released by operating all valve control levers.

■ When lubricating telescoping PTO drives, keep fingers out of shield access slots to prevent injury.

■ Wear gloves when installing belt. Be careful to prevent fingers from being caught between belt and pulley.

■ Use care when installing or removing belt from spring-loaded idler. Springs store energy when extended and, if released suddenly, can cause personal injury.

### STORAGE

■ Block equipment securely for storage.

■ Keep children and bystanders away from storage area.







## SAFETY & INSTRUCTIONAL DECALS

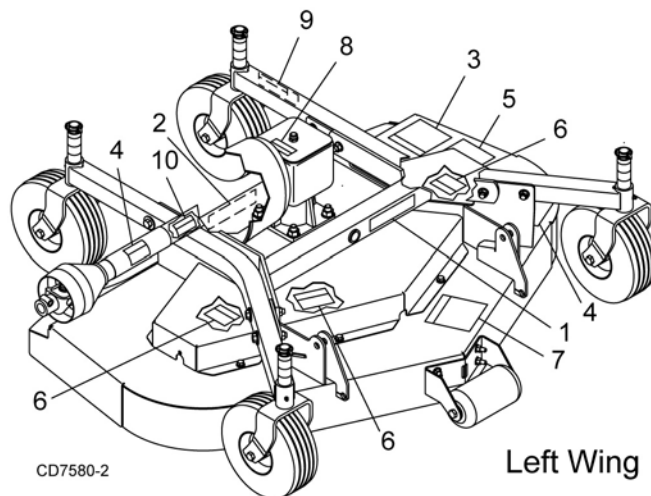
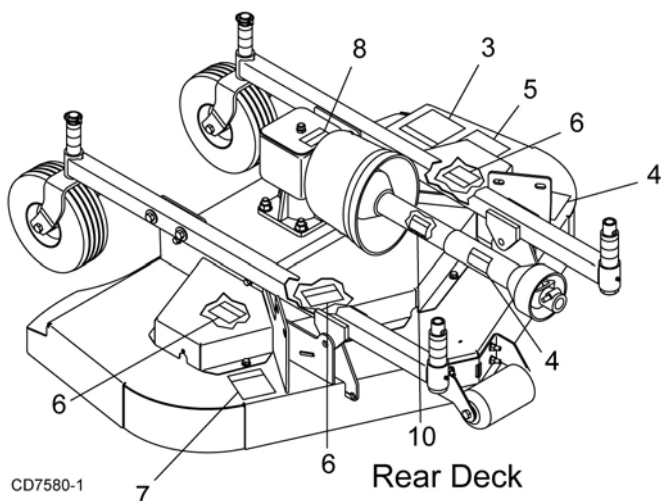
**ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**



**Replace Immediately If Damaged!**

**1 - 1002940 YELLOW  
FRONT REFLECTOR**

**2 - 57123 RED  
REAR REFLECTOR**



**4 - 18864**



**3 - 15503**



### BE CAREFUL!

Use a clean, damp cloth to clean safety decals.

Avoid spraying too close to decals when using a pressure washer; high-pressure water can enter through very small scratches or under edges of decals causing them to peel or come off.

Replacement safety decals can be ordered free from your Woods dealer. To locate your nearest dealer, check the Dealer Locator at [www.WoodsEquipment.com](http://www.WoodsEquipment.com), or in the United States and Canada call 1-800-319-6637.



# SAFETY & INSTRUCTIONAL DECALS

**ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**  
**Replace Immediately If Damaged!**



6 - 18867

**DANGER**

**SHIELD MISSING**  
DO NOT OPERATE  
PUT SHIELD ON

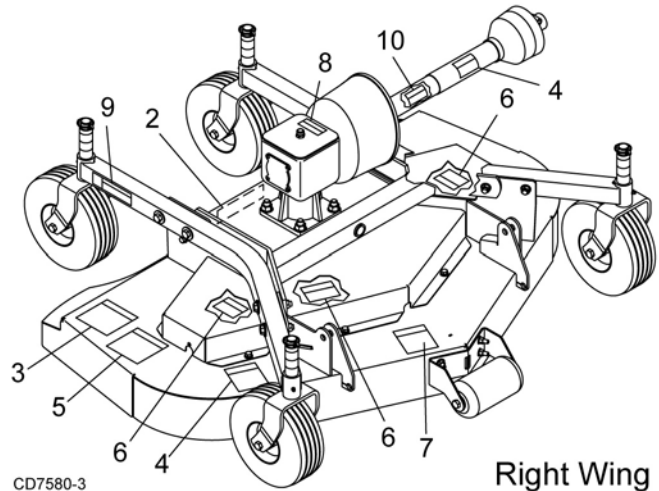
18867-B

8 - 1004114


**DANGER**


If shaft connection is visible, shield is missing. Replace shield before operating equipment.

1004114



5 - 18865

**WARNING**



**FALLING OFF CAN RESULT IN BEING RUN OVER.**

- Tractor must be equipped with ROPS (or ROPS CAB) and seat belt. Keep foldable ROPS systems in "locked up" position at all times.
- Buckle Up! Keep seat belt securely fastened.
- Allow no riders.

**RAISED EQUIPMENT CAN DROP AND CRUSH.**

- Before working underneath, follow all instructions and safety rules in operator's manual and securely block up all corners of equipment with jack stands.
- Securely blocking prevents equipment dropping from hydraulic leak-down, hydraulic system failures or mechanical component failures.

**FALLING OFF OR FAILING TO BLOCK SECURELY CAN RESULT IN SERIOUS INJURY OR DEATH.**

18865-C

7 - 1003751

**WARNING**




**CRUSHING AND PINCHING HAZARD**


- Be extremely careful handling various parts of the machine. They are heavy and hands, fingers, feet, and other body parts could be crushed or pinched between tractor and implement.
- Operate tractor controls from tractor seat only.
- Do not stand between tractor and implement when tractor is in gear.
- Make sure parking brake is engaged before going between tractor and implement.
- Stand clear of machine while in operation or when it is being raised or lowered.

**FAILURE TO FOLLOW THESE INSTRUCTIONS COULD RESULT IN SERIOUS INJURY OR DEATH.**

1003751-A

9 - 1029508



**WARNING**

**RAISED MOWERS CAN DROP AND CRUSH**

- Keep away. Do not go underneath.
- When raised, lock transport latches.
- Lower after transport.

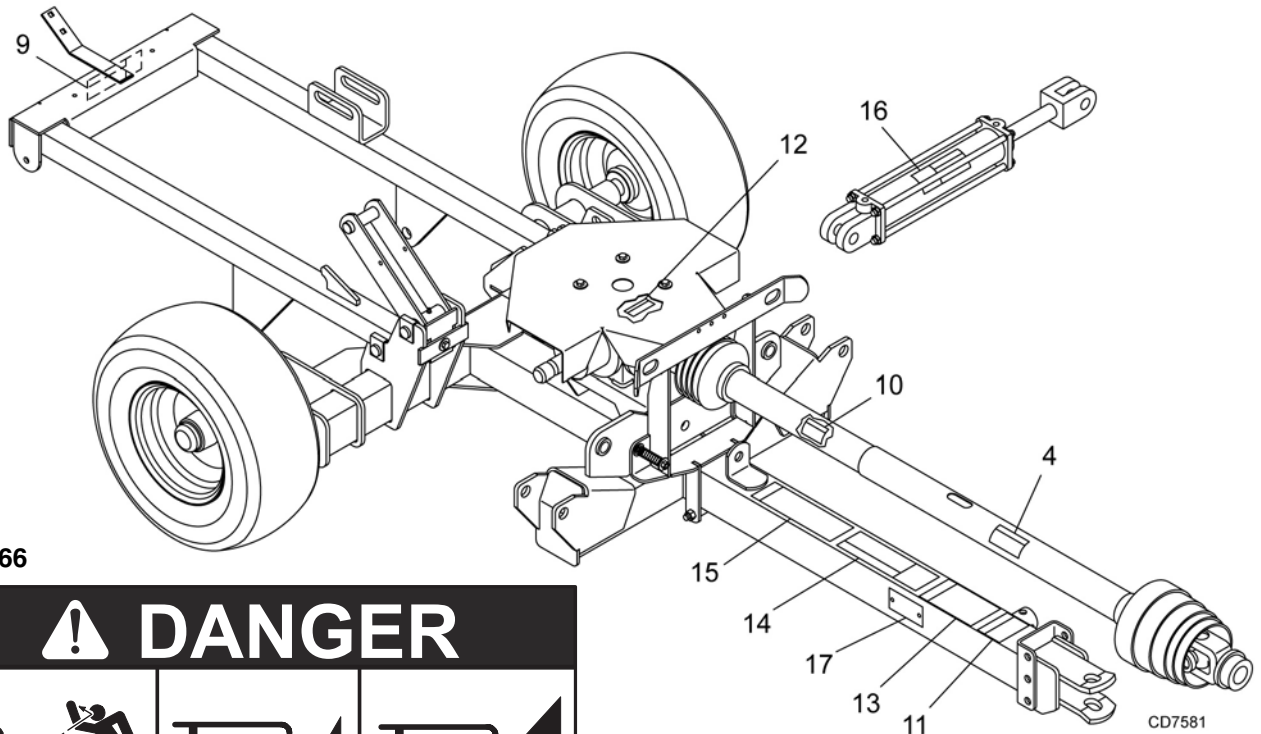
**FAILURE TO FOLLOW INSTRUCTIONS CAN RESULT IN SERIOUS INJURY OR DEATH.**

1029508



# SAFETY & INSTRUCTIONAL DECALS

**ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**  
**Replace Immediately If Damaged!**



11 - 18866

## DANGER

### ROTATING BLADES AND THROWN OBJECTS

- Do not put hands or feet under or into mower when engine is running.
- Before mowing, clear area of objects that may be thrown by blade.
- Keep bystanders away.
- Keep discharge chute and guards in place and in good condition.

**BLADE CONTACT OR THROWN OBJECTS CAN CAUSE SERIOUS INJURY OR DEATH.**

18863-B

12 - 18869

## DANGER

### SHIELD MISSING

DO NOT OPERATE - PUT SHIELD ON

18869-B

17 - Serial Number Plate

MODEL NO.

SERIAL NO.

Woods Equipment Company  
Oregon, Illinois, U.S.A.

14 - 44656

## WARNING

### RAISED MOWERS EXPOSE BLADES AND INCREASE THROWN OBJECT HAZARDS

- Only raise for transport.
- Stop mowers before raising.

**FAILURE TO FOLLOW INSTRUCTIONS CAN RESULT IN SERIOUS INJURY OR DEATH.**

44656



## SAFETY & INSTRUCTIONAL DECALS

**ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**



**Replace Immediately If Damaged!**

10 - 33347

 **DANGER**



**GUARD MISSING.  
DO NOT OPERATE.**

 **DANGER**




**GUARD MISSING.  
DO NOT OPERATE.**

33347E

 **DANGER**

13 - 18877

 **WARNING**


**TO AVOID SERIOUS  
INJURY OR DEATH:**

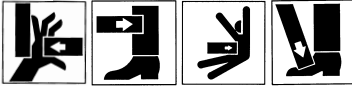
- Read Operator's Manual (available from dealer) and follow all safety precautions.
- Keep all shields in place and in good condition.
- Operate mower from tractor seat only.
- Lower mower, stop engine and remove key before dismounting tractor.
- Allow no children or untrained persons to operate equipment.
- Do not transport towed or semi-mounted units over 20 mph.

**FAILURE TO OPERATE SAFELY  
CAN RESULT IN  
INJURY OR DEATH.**

18877-C

15 - 1002941

 **WARNING**




**CRUSHING AND  
PINCHING HAZARD**


- Be extremely careful handling various parts of the machine. They are heavy and hands, fingers, feet, and other body parts could be crushed or pinched between tractor and implement.
- Operate tractor controls from tractor seat only.
- Do not stand between tractor and implement when tractor is in gear.
- Make sure parking brake is engaged before going between tractor and implement.
- Stand clear of machine while in operation or when it is being raised or lowered.

**FAILURE TO FOLLOW THESE  
INSTRUCTIONS COULD  
RESULT IN SERIOUS INJURY  
OR DEATH.**

1002941-A

16 - 19924

  
19924-B

 **WARNING**

**HIGH-PRESSURE HYDRAULIC OIL LEAKS CAN PENETRATE SKIN  
RESULTING IN SERIOUS INJURY, GANGRENE OR DEATH.**

- Check for leaks with cardboard; never use hand.
- Before loosening fittings: lower load, release pressure, and be sure oil is cool.
- Consult physician immediately if skin penetration occurs.

# OPERATION

The operator is responsible for the safe operation of the mower. The operator must be properly trained. Operators should be familiar with the mower, the tractor, and all safety practices before starting operation. Read the safety rules and safety decals on page 5 through page 12.

This mower is designed for lawn and grass mowing. It is not designed for rough conditions or heavy weed mowing. It is equipped with suction type blades for best results in lawn mowing.

Recommended mowing speed for most conditions is from 2 to 5 mph. Always operate power unit PTO at 540 rpm.

This section provides information for attaching the mower to the tractor and preparing it for field operation. Review this data prior to tractor hook-up and operation.

Lower mower to the ground when not in use.

## DANGER

■ Full chain shielding must be installed when operating in populated areas or other areas where thrown objects could injure people or damage property.

- If this machine is not equipped with full chain shielding, operation must be stopped when anyone comes within 300 feet (92 m).
- This shielding is designed to reduce the risk of thrown objects. The mower deck and protective devices cannot prevent all objects from escaping the blade enclosure in every mowing condition. It is possible for objects to ricochet and escape, traveling as much as 300 feet (92 m).

## WARNING

■ Before dismounting power unit or performing any service or maintenance, follow these steps: disengage power to equipment, lower the 3-point hitch and all raised components to the ground, operate valve levers to release any hydraulic pressure, set parking brake, stop engine, remove key, and unfasten seat belt.

- Never allow riders on power unit or attachment.
- Never allow children or untrained persons to operate equipment.
- Keep bystanders away from equipment.
- Make sure spring-activated locking pin or collar slides freely and is seated firmly in tractor PTO spline groove.

## CAUTION

■ Stop power unit and implement immediately upon striking an obstruction. Dismount power unit, using proper procedure. Inspect and repair any damage before resuming operation.

■ Always wear relatively tight and belted clothing to avoid getting caught in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head; and respirator or filter mask where appropriate.

## ATTACHING MOWER TO TRACTOR

## WARNING

■ Make sure spring-activated locking pin or collar slides freely and is seated firmly in tractor PTO spline groove.

■ Make sure shields and guards are properly installed and in good condition. Replace if damaged.

■ Never attach the mower release rope to the operator, the operator's clothing, or the tractor seat.

1. Park mower and tractor on a level, hard-surfaced area.
2. Adjust tractor hitch bracket on trailer frame so the trailer is level when attached to the tractor. Pin the mower to the tractor. See Leveling Mower, page 14.

**NOTE:** When attaching mower to tractor drawbar, make sure the correct drawbar pin is used. A Category 1 drawbar is 1". Failure to use the correct pin size will result in premature wear of hitch and drawbar hole. If the hitch on the mower doesn't match your tractor drawbar, contact your dealer to order the correct size hitch for your tractor. If mower will be attached to tractor for a long period of time, secure hitch to drawbar using a bolt, locknut, and washers assembled tightly. This will reduce wear on drawbar and hitch.

A 1-3/8" 6B spline PTO shaft is used for connecting the mower to the tractor. This mower is designed for 540 rpm PTO only.

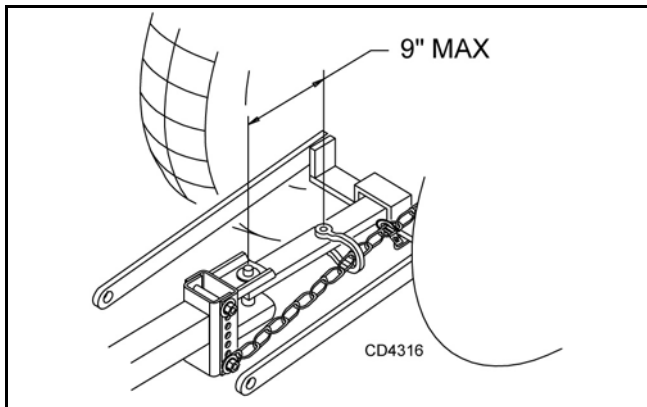
The PTO drive shaft is intended for use with tractors that have 14 inches between the end of the PTO shaft and the tractor's drawbar hitch pin hole.

3. Attach the safety chain to the tractor as shown in Figure 1.



4. Attach the mower drive shaft to tractor PTO. Make sure the lock collar engages securely.
5. Attach the end of the mower transport's lock release rope to a location on the tractor within easy reach of the operator.

**NOTE:** When routing the rope, do not route through the hydraulic hose guide and do not allow rope slack to drop between the driveline shields and the gearbox rotating shafts.



**Figure 1.** Tow Chain Installation

## Attaching Hydraulic Hoses

1. Inspect hydraulic hoses to ensure they are in good condition.
2. Clean hydraulic quick coupler before connecting them to the tractor hydraulic ports.
3. Attach hoses to tractor hydraulic ports. Do not allow hose slack to drag on the ground or become caught on tractor 3-point arms or other tractor components.

## Interference Check

1. Be sure that the tractor 3-point lift arms do not interfere with hydraulic hoses, driveline or mower frame.
2. Check for straight ahead operation and full turning angles. If there is any interference, remove the 3-point arms.

**NOTE:** Contact between 3-point arms and mower can cause damage, especially when turning.

## CV Driveline Turning Limits

### NOTICE

- Do not exceed turning angle of 80 degrees at the head of the Constant Velocity (CV) driveline or damage will occur.

Check for excessive turn angle:

1. Disconnect the driveline from the tractor.

2. Start engine and turn as far right or left as possible.
3. Shut off the engine and connect the CV driveline to the tractor. If it cannot be connected, the turn angle is too severe.
4. Restart the tractor and straighten the angle slightly.
5. Shut off the engine and connect the CV driveline to tractor.
6. Repeat the process until the driveline can be connected. The point at which the driveline can be connected is the maximum turn that can be made.

## Leveling Mower

**NOTE:** To ensure satisfactory mower performance, the trailer frame and decks must be leveled before operating the mower. During normal operation, the mower should be leveled twice each season. The mower must be leveled each time a tractor with a different drawbar height is used.

Follow this procedure to level the mower for operation:

1. Park the tractor and mower on a flat level surface with the decks in mowing position.
2. Inflate all tires to the recommended pressure: 20 psi for trailer tires.
3. Level the trailer frame by adjusting the hitch.
4. Remove the hitch clevis from the trailer frame and pin to the tractor drawbar.
5. Use the parking jack to adjust the trailer frame to the level position. Align the nearest hitch adjustment hole in the hitch clevis with a hole in the trailer frame.
6. Tighten the hardware to specifications in the Bolt Torque Chart on page 50. Readjust the level of the frame each time the drawbar height changes.
7. Attach the driveline to the tractor.

## CUTTING HEIGHT ADJUSTMENT

### WARNING

- Keep all persons away from operator control area while performing adjustments, service, or maintenance.

### NOTICE

- Avoid low cutting heights. Striking the ground with blades produces one of the most damaging shock loads a mower can encounter. Allowing blades to contact ground repeatedly will cause damage to mower and drive.



1. Level mower from side to side. Check by measuring from mower frame to the ground at each deck rail.
2. Verify that the same amount of spacers are under all caster arms.
3. Loosen cap screws that attach caster arm assembly to deck.
4. Set mower on the ground.
5. Retighten cap screws. This equalizes the clearance in the bolt holes.
6. Best mowing results will be obtained with front of mower level with, or slightly lower than, the rear.
7. Cutting height is controlled with front and rear caster wheel adjustment.
8. To raise rear of mower, move caster adjustment spacers under caster arms.
9. To raise front of mower, move spacers under front caster wheel arms.

**Table 1: Cutting Height Chart**

Spacers Required Under Caster Arm Pivot Tube		
Cut Height	1/2" Spacer	1 Spacer
1"	0	0
1-1/2"	1	0
2"	0	1
2-1/2"	1	1
3"	0	2
3-1/2"	1	2
4"	0	3
4-1/2"	1	3

## **TRANSPORT**

When transporting the mower, raise the wings and the rear deck until all three transport locks engage automatically.

To lower the wings and the rear deck:

1. Slightly raise the wings and rear deck to take pressure off the locking mechanisms.
2. Pull the transport lock release rope to disengage the locks. Lower the wings and rear deck and release the rope.

## **STARTING AND STOPPING MOWER**

### **WARNING**

- Do not operate PTO during transport.
- Never direct discharge toward people, animals, or property.
- Keep hands, feet, hair, and clothing away from equipment while engine is running. Stay clear of all moving parts.

### **CAUTION**

- Stop power unit and implement immediately upon striking an obstruction. Dismount power unit, using proper procedure. Inspect and repair any damage before resuming operation.
- Always sit in power unit seat when operating controls or starting engine. Securely fasten seat belt, place transmission in neutral, engage brake, and ensure all other controls are disengaged before starting power unit engine.

### ***NOTICE***

- Stopping the mower with belt in contact with a very hot pulley will bake and ruin belt.

Power for operating the mower is supplied from the tractor PTO. Refer to your tractor manual for instructions on engaging and disengaging the PTO.

Operate PTO at 540 rpm. Know how to stop tractor and mower quickly in case of an emergency.

If the mower becomes plugged causing the belt to slip for over two seconds, follow these steps:

1. Raise mower just enough to clear accumulated material.
2. Continue running at least two minutes, allowing pulleys to cool.

To reduce the risk of thrown objects, do not raise the mower higher than necessary

## **OPERATING**

### **WARNING**

- Do not operate mowers on terrain that raises mowers beyond 25 degrees. Exceeding this design limit will result in U-joint “knocking noise” and potential driveline failure and could cause driveline to pull apart.

When engaging the PTO, engine rpm should always be low. Once engaged and ready for mowing, increase

PTO speed to 540 rpm and maintain speed throughout the cutting operation.

Mower vibration tends to loosen bolts. All hardware should be checked regularly to maintain proper torque. Each time the mower is used, check all hardware to be sure it is secure. Recommended torque values can be found on page 50.

The condition of the terrain will determine cutting results. For best results, mower blades should be kept sharp at all times and the platform as level as possible. When mower blades show excessive wear, they should be replaced.

## Operating Technique

### CAUTION

■ **Stop power unit and implement immediately upon striking an obstruction. Dismount power unit, using proper procedure. Inspect and repair any damage before resuming operation.**

Proper ground speed will depend upon the terrain, the height, type, and density of material to be cut.

Normally, ground speed will range from two to five mph. Tall dense material should be cut at a low speed; thin medium-height material can be cut at a faster ground speed.

Always operate tractor PTO at 540 rpm to maintain proper blade speed and produce a clean cut.

Under certain conditions, tractor tires may roll some grass down and prevent it from being cut at the same height as the surrounding area. When this occurs, reduce your ground speed, but maintain PTO at 540 rpm. The lower ground speed will permit grass to partially rebound.

In general, lower cutting heights give a more even cut with less tendency to leave tire tracks. However, it is better to cut grass frequently rather than too short. Short grass deteriorates rapidly in hot weather and invites weed growth during growing seasons. Follow local recommendations for the suitable cutting height in your area.

## Operating Tips

### WARNING

■ **Inspect and clear area of stones, branches, or other hard objects that might be thrown, causing injury or damage.**

Extremely tall material should be cut twice. Set mower at a higher cutting height for the first pass. Then cut at desired height 90 degrees to the first pass.

Remember, sharp blades produce cleaner cuts and require less power.

Analyze area to be cut to determine the best procedure. Consider height and type of grass and terrain type: hilly, level, or rough.

## Uneven Terrain

### WARNING

- **Do not operate or transport on steep slopes.**
- **Do not stop, start, or change directions suddenly on slopes.**
- **Use extreme care and reduce ground speed on slopes and rough terrain.**
- **Watch for hidden hazards on the terrain during operation.**

In extremely uneven terrain, rear wheel weights, front tractor weights and/or front tire ballast should be used to improve stability.

Pass diagonally through sharp dips and avoid sharp drops to prevent “hanging up” the tractor and the mower. Practice will improve your skills in maneuvering rough terrain.

Avoid sudden starts and stops when traveling up or down hill.

Always mow down slopes, never up or across the face. Avoid operating on steep slopes.

Slow down on sharp turns and slopes to prevent tipping and losing control.

## REMOVING MOWER FROM TRACTOR

1. Park the unit on a level, hard surface with the wings and rear deck fully lowered to the ground.
2. Block the wheels to keep the mower from rolling when unhitched from tractor.
3. Attach the jack to the side of the tongue and adjust the height to take the weight off the tractor hitch.
4. Disconnect the PTO shaft and the hydraulic hose, untie the mower transport lock release rope from the tractor, and remove the hitch pin.
5. Store the PTO shaft end and the hydraulic hose couplings off the ground and keep them clean.

## **PRE-OPERATION CHECK LIST** (OWNER's RESPONSIBILITY)

- Review and follow all safety rules and safety decal instructions on page 5 through page 12.
- Check that all safety decals are installed and in good condition. Replace if damaged.

- \_\_\_ Check that all shields and guards are properly installed and in good condition. Replace if damaged.
- \_\_\_ Check that chain shielding is in good condition and replace any damaged chain links.
- \_\_\_ Check that all hardware and cotter pins are properly installed and secured.
- \_\_\_ Check to ensure blades are sharp, in good condition, and installed correctly. Replace if damaged.
- \_\_\_ Check that equipment is properly and securely attached to tractor.
- \_\_\_ Make sure driveline spring-activated locking pin or collar slides freely and is seated firmly in tractor PTO spline groove.
- \_\_\_ Make sure the driveline guards and tether chains are in good condition. Guards must rotate freely on driveline. Fasten tether chains as instructed to the tractor and the equipment.
- \_\_\_ Inspect area and remove stones, branches or other hard objects that might be thrown, causing injury or damage.
- \_\_\_ Do not allow riders.
- \_\_\_ Check all lubrication points and grease as instructed in Lubrication Information, page 18. Make sure the PTO slip joint is lubricated and that the gearbox fluid levels are correct.
- \_\_\_ Check that all hydraulic hoses and fittings are in good condition and not leaking before starting tractor. Check that hoses are not twisted, bent sharply, kinked, frayed or pulled tight. Replace any damaged hoses immediately.
- \_\_\_ Make sure tractor ROPS or ROPS cab and seat belt are in good condition. Keep seat belt securely fastened during operation
- \_\_\_ Before starting engine, operator must be in tractor seat with seat belt fastened. Place transmission in neutral or park, engage brake and disengage tractor PTO.



# OWNER SERVICE

The information in this section is written for operators who possess basic mechanical skills. If you need help, your dealer has trained service technicians available. For your protection, read and follow the safety information in this manual

## DANGER

■ Full chain shielding must be installed when operating in populated areas or other areas where thrown objects could injure people or damage property.

- If this machine is not equipped with full chain shielding, operation must be stopped when anyone comes within 300 feet (92 m).
- This shielding is designed to reduce the risk of thrown objects. The mower deck and protective devices cannot prevent all objects from escaping the blade enclosure in every mowing condition. It is possible for objects to ricochet and escape, traveling as much as 300 feet (92 m).

## WARNING

■ Keep hands and body away from pressurized lines. Use paper or cardboard, not hands or other body parts to check for leaks. Wear safety goggles. Hydraulic fluid under pressure can easily penetrate skin and will cause serious injury or death.

■ Make sure that all operating and service personnel know that if hydraulic fluid penetrates skin, it must be surgically removed as soon as possible by a doctor familiar with this form of injury or gangrene, serious injury, or death will result. **CONTACT A PHYSICIAN IMMEDIATELY IF FLUID ENTERS SKIN OR EYES. DO NOT DELAY.**

■ Keep all persons away from operator control area while performing adjustments, service, or maintenance.

■ Do not disconnect hydraulic lines until engine is stopped, power unit is properly secured, equipment and all components are lowered to the ground, and system pressure is released by operating all valve control levers.

■ Before dismounting power unit or performing any service or maintenance, follow these steps: disengage power to equipment, lower the 3-point hitch and all raised components to the ground, operate valve levers to release any hydraulic pressure, set parking brake, stop engine, remove key, and unfasten seat belt.

## CAUTION

■ Always wear relatively tight and belted clothing to avoid getting caught in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head; and respirator or filter mask where appropriate.

## LUBRICATION INFORMATION

Do not let excess grease collect on or around parts, particularly when operating in sandy areas.

See Figure 2 and Figure 3 for lubrication points and frequency or lubrication based on normal operating conditions. Severe or unusual operating conditions may require more frequent lubrication.

Use a lithium grease of #2 consistency with a MOLY (molybdenum disulfide) additive for all locations unless otherwise noted. Be sure to clean fittings thoroughly before attaching grease gun. One good pump of most guns is sufficient when the lubrication schedule is followed.

### Gearbox Lubrication

Use SAE 90W gear lube in gearboxes. Fill to plug on side of gearbox. Check gearbox daily for evidence of leakage, and contact your dealer if leakage occurs.

### Driveline Lubrication

Lubricate the driveshaft slip joints every eight operating hours. Failure to maintain proper lubrication could result in damage to U-joints, gearbox and drivelines.

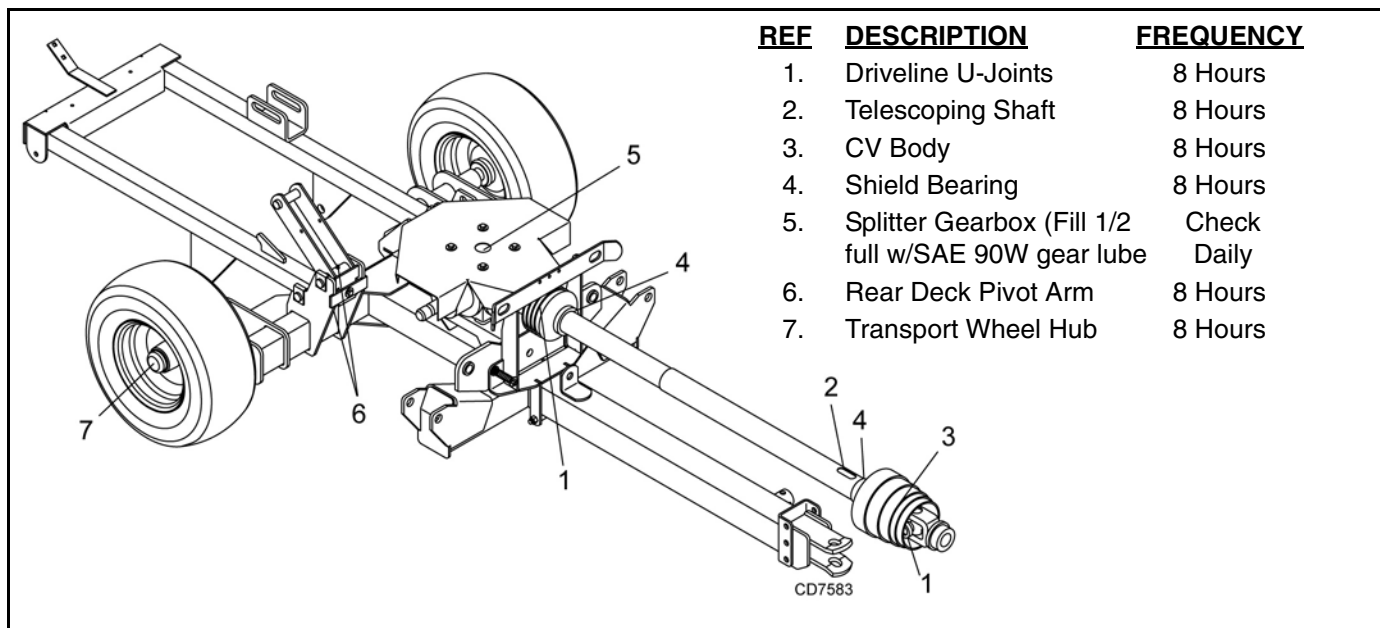
1. Lower mower decks to the ground.
2. Disconnect drivelines from decks.
3. Separate driveline half.
4. Apply grease all around and along inner shaft.
5. Reassembly driveline halves and connect to gearboxes.
6. Raise and lower decks several time to distribute grease along drivelines.

To grease the telescoping shaft of the CV drive, the drive must be disconnected from the tractor and fully collapsed to expose the grease fitting.

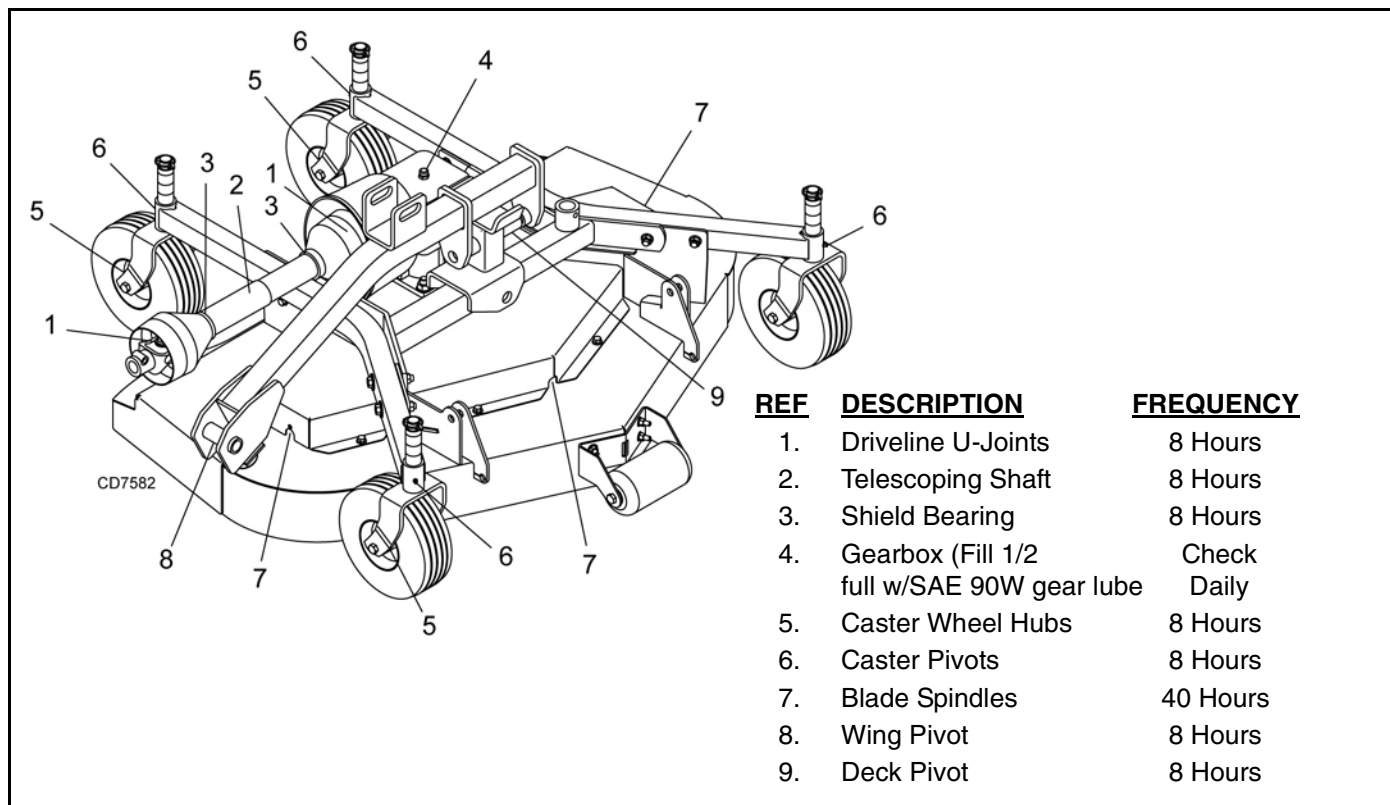
### Seasonal Lubrication

In addition to the daily recommended lubrication, a more extensive application is recommended seasonally.

1. Fill CV double yokes with 20 pumps of grease with the joints in a straight line.
2. Articulate CV body to maximum angle several times to ensure full coverage of joints.
3. Place joints in the straight position and add 10 additional pumps of grease to both joints.
4. Wipe telescoping drive clean of all old grease and contaminants.
5. Add a thin layer of new grease over telescoping drive.



**Figure 2.** Trailer Lubrication Points



**Figure 3.** Deck Lubrication Points

## **BELT SERVICING**

### **Belt Replacement**

One of the major causes of belt failure is improper installation. Before installing a new belt, check the following:

1. Check pulley shafts and bearings for wear.
2. Check pulley grooves for cleanliness.
3. Make sure spindles turn freely and without wobble.

If grooves require cleaning, moisten a cloth with a non-flammable, non-toxic degreasing agent or commercial detergent and water.

Avoid excessive force during installation. Do not use tools to pry belt into pulley groove. Do not roll belt over pulleys to install. This can cause hidden damage and premature belt failure.

### **Belt Installation**

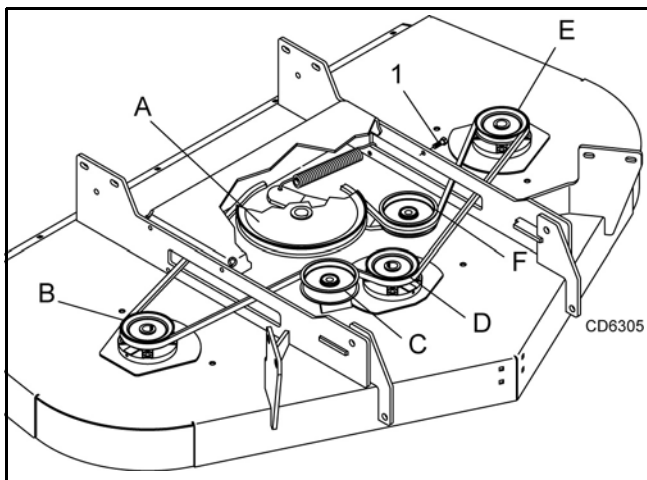


Figure 4. Belt Routing

### ***NOTICE***

■ **Use care when installing or removing belt from spring-loaded idler. Springs store energy when extended and, if released suddenly, can cause personal injury**

1. Slide belt under drive pulley A and over idler arm. Position belt around drive pulley A.
2. It may be necessary to remove front bolts (1) and swing gearbox stand up to gain access to pulley A. Route belt around pulley B, idler C, and pulley D as shown.
3. Make sure belt is on drive pulley A and route around idler F.

4. Grasp belt between spindle pulley E, spring-loaded idler F and spindle pulley D. Pull spring-loaded idler with belt to obtain enough belt length to route it over pulley E. Make sure spring-loaded idler pivots freely with belt installed.

## **BLADE SERVICING**

### **WARNING**

■ **Before servicing blades, raise and lock mower in transport position, turn off engine, set parking brake and remove key.**

■ **Keep all persons away from operator control area while performing adjustments, service, or maintenance.**

### **CAUTION**

■ **Frequently check blades. They should be sharp, free of nicks and cracks, and securely fastened.**

1. Raise mower decks to the transport position and make sure transport locks are engaged.
2. Shut off tractor, relieve hydraulic pressure in cylinders, set parking brake and remove key.
3. Inspect blades before each use to determine that they are mounted securely and are in good condition.
4. Replace any blade that is bent, excessively nicked, worn, or has any other damage.
5. Small nicks can be ground out when sharpening.

### **Blade Removal**

### **WARNING**

■ **Do not handle blades with bare hands. Careless or improper handling may result in serious injury.**

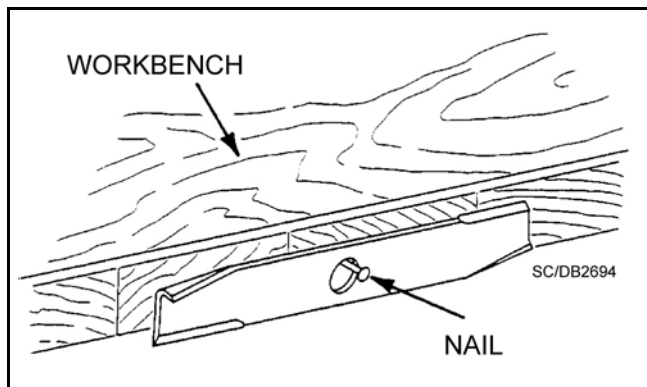
1. Remove bolt (1), Figure 7, which has right hand threads.
2. Remove washer and blade.

### **Blade Sharpening**

### ***NOTICE***

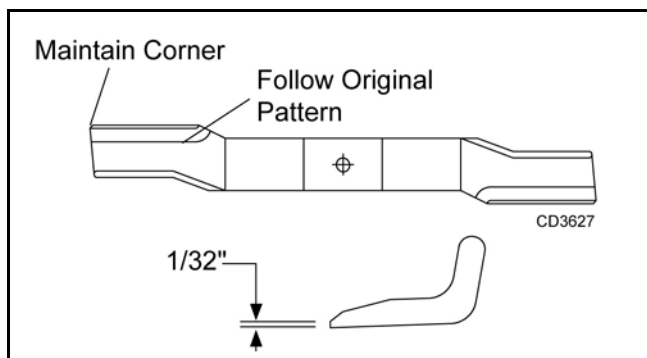
■ **When sharpening blades, be sure to balance them. Unbalanced blades will cause excessive vibration that can damage blade spindle bearings. Vibration may also cause structural cracks in mower housings.**





**Figure 5. Blade Balancing**

1. Follow original sharpening pattern.
2. Do not sharpen blade to a razor edge, but leave approximately 1/64" blunt edge.
3. Do not sharpen back side of blade.
4. Sharpen both cutting edges equally to keep blade balanced. Balance blade using the method shown in Figure 5.



**Figure 6. Blade Sharpening**

### Blade Installation

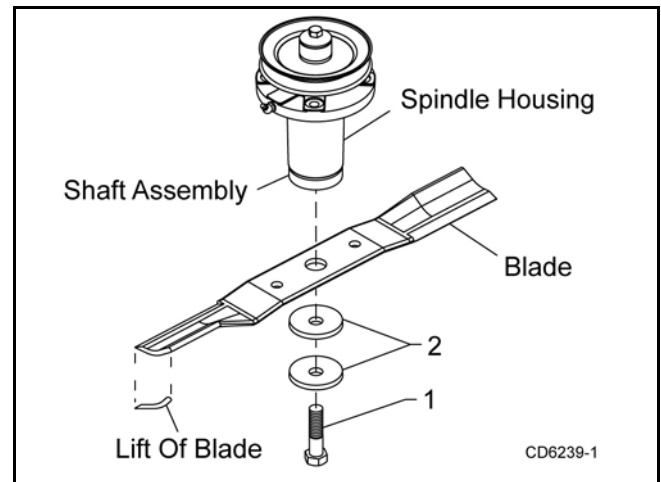
#### **CAUTION**

- Your dealer can supply genuine replacement blades. Substitute blades may not meet original equipment specifications and may be dangerous.

#### **NOTICE**

- When installing blade, the lift of the blade must be toward the spindle blade housing as shown in

**Figure 7. Torque bolt (1) into shaft assembly to 100 lbs-ft.**



**Figure 7. Blade and Spindle Assembly**

1. Place blade over blade pilot on the bottom of the shaft assembly.
2. Place bell washer (2) over blade and insert blade bolt (1). Torque blade bolt to 100 lbs-ft.

### **CHAIN SHIELDING**

#### **DANGER**

- Full chain shielding must be installed when operating in populated areas or other areas where thrown objects could injure people or damage property.

- If this machine is not equipped with full chain shielding, operation must be stopped when anyone comes within 300 feet (92 m).
- This shielding is designed to reduce the risk of thrown objects. The mower deck and protective devices cannot prevent all objects from escaping the blade enclosure in every mowing condition. It is possible for objects to ricochet and escape, traveling as much as 300 feet (92 m).

Check that chain shielding is in good condition and replace any damaged chain links.

## **CLEANING**

### **After Each Use**

- Remove large debris such as clumps of dirt, grass, crop residue, etc. from machine.
- Inspect machine and replace worn or damaged parts.
- Replace any safety decals that are missing or not readable.

### **Periodically or Before Extended Storage**

- Clean large debris such as clumps of dirt, grass, crop residue, etc. from machine.
- Remove the remainder using a low-pressure water spray.

1. Be careful when spraying near scratched or torn safety decals or near edges of decals as water spray can peel decal off surface.
2. Be careful when spraying near chipped or scratched paint as water spray can lift paint.
3. If a pressure washer is used, follow the advice of the pressure washer manufacturer.

- Inspect machine and replace worn or damaged parts.
- Sand down scratches and the edges of areas of missing paint and coat with Woods spray paint of matching color (purchase from your Woods dealer).
- Replace any safety decals that are missing or not readable (supplied free by your Woods dealer). See Safety Decals section for location drawing.

## **TROUBLESHOOTING**

### **MOWING CONDITIONS**

<b>PROBLEM</b>	<b>POSSIBLE CAUSE</b>	<b>SOLUTION</b>
Grass cut higher in center of swath than at edge	Height of mower higher at front than at rear	Adjust mower height and attitude so that mower rear and front are within 1/2 inch of same height.
	Loose Blade	Check blade hardware.
Grass cut lower in center of swath than at edge	Height of mower lower at front than at rear	Adjust mower height and attitude so that mower rear and front are within 1/2 inch of same height.
	Loose Blade	Check blade hardware.
Streaking conditions in swath	Conditions too wet for mowing	Allow grass to dry before mowing.
	Blades unable to cut that part of grass pressed down by path of tractor tires	Slow ground speed of tractor but keep engine running at full PTO rpm. Cutting lower will help. Adjust tractor tire spacing if possible.
	Dull blades	Sharpen or replace blades.
	Loose Blade	Check blade hardware.
Material discharges from mower unevenly; bunches of material along swath	Material too high and too much material	Reduce ground speed but maintain 540 rpm at tractor PTO, or make two passes over material.  Raise mower for the first pass and lower for the second and cut 90 degrees to first pass.  Raise rear of mower high enough to permit material discharge.
	Grass wet	Allow grass to dry before mowing. Slow ground speed of tractor but keep engine running at full PTO rpm.

# TROUBLESHOOTING

## BELT CONDITIONS

PROBLEM	POSSIBLE CAUSE	SOLUTION
Belt slippage	Mower overloading; material too tall or heavy	Reduce tractor ground speed but maintain full PTO rpm. Cut material twice, one high pass and then mow at desired height. Cut 90 degrees to first pass.
	Oil on belt from over-lubrication	Be careful not to over-lubricate. Clean lubricant from belt and pulleys with clean rag. Replace oil-soaked belt.
	Belt hung up or rubbing	Check belt position in pulleys and idlers. Check belt for free travel in pulleys. Check under mower and around blade spindle shaft for wire, rags, or other foreign material. Clean all material from under mower.
Frayed edges on belt cover	Belt misaligned	Re-align belt. Be sure belt does not rub any other part while running.
	Pulley misaligned	Inspect to ensure belt is running in center of backside idler. Shim idler as necessary to align.
Belt rollover	Pulley misaligned	Re-align.
	Damaged belt	Replace belt*.
	Foreign object in pulley groove	Inspect all pulley grooves for rust, paint, or weld spots and remove.
	Worn pulley groove	Replace pulley.
Damaged belt	Rollover, high shock loads or installation damaged	Replace belt*.
Belt breakage	High shock loads	Avoid abusive mowing. Avoid hitting the ground or large obstructions.
	Belt came off drive	Check pulleys for foreign material in grooves. Avoid hitting solid objects or ground.

\* Check belt for damage by laying it flat on the floor. A belt that does not lie flat (has humps or twists, indicating broken or stretched cords) must be replaced.

# DEALER SERVICE

The information in this section is written for dealer service personnel. The repair described here requires special skills and tools. If your shop is not properly equipped or your mechanics are not properly trained in this type of repair, you may be time and money ahead to replace complete assemblies.

## WARNING

■ Before working underneath, read manual instructions, securely block up, and check stability. Secure blocking prevents equipment from dropping due to hydraulic leak down, hydraulic system failure, or mechanical component failure.

■ Keep all persons away from operator control area while performing adjustments, service, or maintenance.

## CAUTION

■ Always wear relatively tight and belted clothing to avoid entanglement in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head; and respirator or filter mask where appropriate.

### BLADE SPINDLE REPAIR

Spindle repair requires special skills and tools. If your shop is not properly equipped or your mechanics are not trained in this type of repair, you may be time and money ahead to use a new spindle assembly.

For reference, the grease fitting is in the top of the spindle shaft.

Permatex® 3D Aviation Form-A-Gasket or equivalent is recommended as a sealant.

### Remove Spindle

1. Remove belt shields from deck.
2. Remove belt.
3. Remove blade from spindle assembly.
4. Remove nuts (6) and bolts (9) that secure spindle to mower. (See Figure 8.)

### Disassemble Spindle

1. Remove bolt (1) and washer (2) from the top of the spindle.

2. Remove sheave (3) and spacer (4).

**NOTE:** A wheel puller may be needed if sheave can not be removed by hand. Retain key (11).

3. Slide shaft assembly (12), lower bearing (5), and long spacer (10) out the bottom of spindle housing (8).
4. Remove upper bearing (5) and spacer (4) from top of spindle housing.
5. Inspect parts and replace as needed.

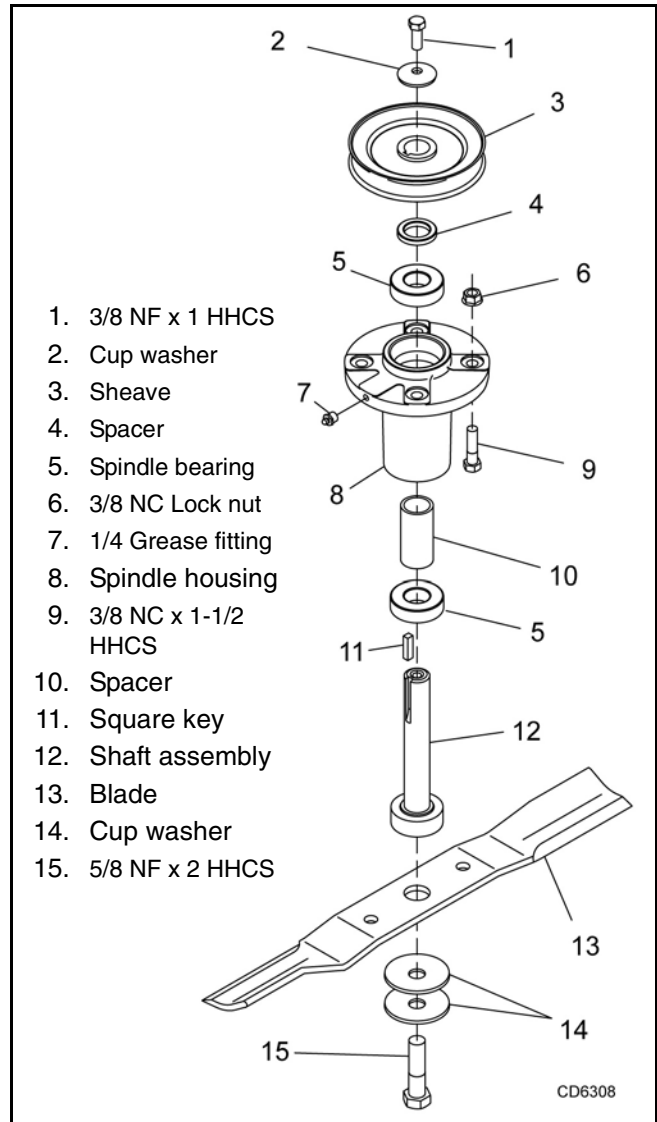


Figure 8. Blade Spindle Assembly

### Assemble Spindle

1. Slide lower bearing (5) over shaft assembly (12) with seal down.
2. Slide long spacer (10) on shaft assembly.

3. Insert shaft assembly with bearing and spacer into spindle housing from the bottom.
4. Install upper bearing (5) over shaft with the seal facing up.
5. Install spacer (4) and sheave (3) over shaft.
6. Align keyways in shaft and sheave and insert key (11).
7. Install washer (2), and bolt (1). Torque bolt to 35 lbs-ft.
8. Rotate sheave and check for free movement.
9. Lubricate spindle.

## **GEARBOX REPAIR**

Read this entire section before starting any repair. Many steps are dependent on each other.

Fill gearbox with SAE 80W or 90W gear lube until it runs out the side level plug.

Repair to this gearbox is limited to replacing bearings, seals, and gaskets. Replacing gears, shafts, and a housing is not cost effective. It is more economical to purchase a complete gearbox if repair to anything other than replacement of bearings, seals or gaskets is required.

Inspect gearbox for leakage and bad bearings.

Leakage is a very serious problem and must be corrected immediately.

Bearing failure is indicated by excessive noise and side to side or end play in gear shafts.

## **Seal Replacement**

Recommended sealant for gearbox repair is Permatex® Aviation 3D Form-A-Gasket or equivalent.

Leakage can occur at the vertical or horizontal gaskets and shaft seals.

Leakage at the horizontal gasket or seal can be repaired without removing the gearbox from the mower.

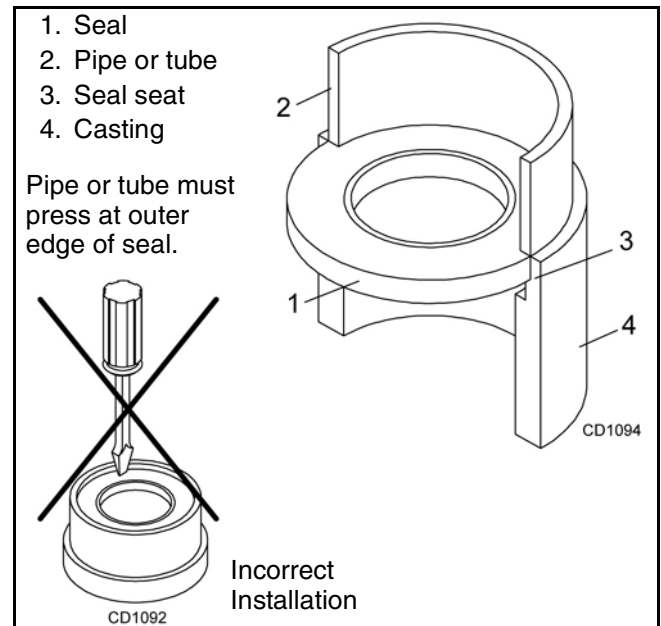
## **Seal Installation**

**NOTE:** Proper seal installation is important. An improperly installed seal will leak.

1. Clean area in housing where seal outer diameter (OD) seats. Apply a thin coat of Permatex.
2. Inspect area of shaft where seal seats. Remove any burrs or nicks with an emery cloth.
3. Lubricate gear shaft and seal lips.
4. Place seal squarely on housing, spring-loaded lip toward housing. Select a piece of pipe or tubing with an OD that will sit on the outside edge of the

seal but will clear the housing. Tubing with an OD that is too small will bow seal cage and ruin seal.

5. Carefully press seal into housing, avoiding distortion to the metal seal cage.



**Figure 9.** Seal Installation

## **Vertical Shaft Seal Replacement**

**Refer to Figure 11.**

1. Disconnect and remove the driveline from the gearbox.
2. Remove vent plug (15) and siphon gear lube from housing through this opening.
3. Remove gearbox stand from mower deck.
4. Remove gearbox and pulley from stand (2).
5. Remove vertical shaft seal. Replace with new seal (see Seal Replacement, page 25).

Vertical seal should be recessed in housing. Horizontal seal should be pressed flush with outside of housing.

**NOTE:** Distortion to seal cage or damage to seal lip will cause seal to leak.

6. Fill gearbox with SAE 80W or 90W gear lube until it runs out the level plug.
7. Assemble gearbox and pulley to gearbox stand. Attach gearbox stand to mower deck.

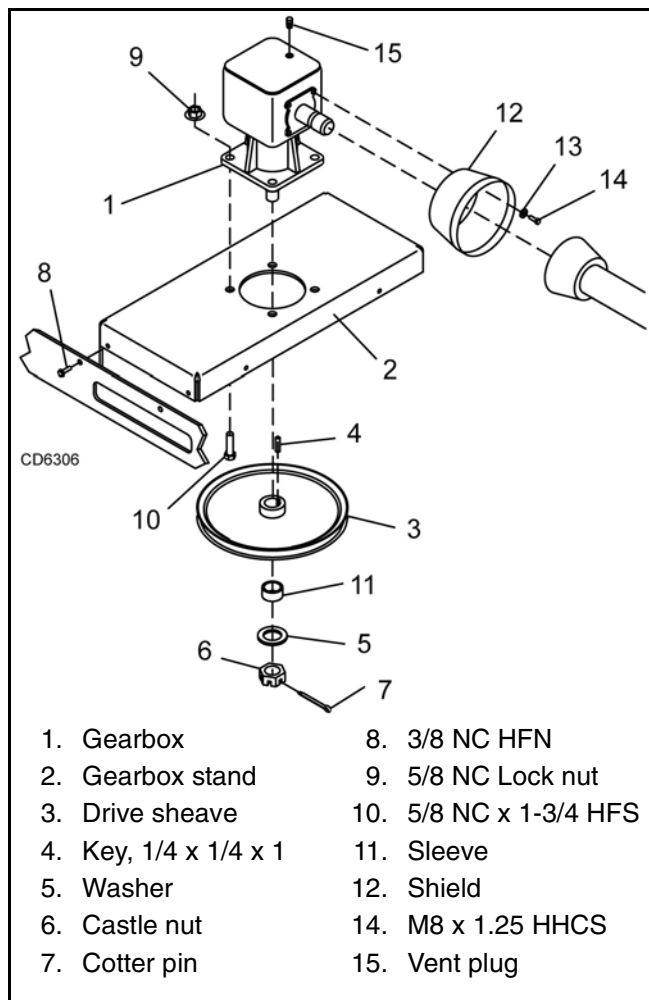
## **Horizontal Shaft Seal Replacement**

1. Disconnect and remove the driveline from the gearbox.
2. Remove vent plug (27), Figure 9, and siphon gear lube from housing through this opening.

3. If the leak occurred at either end of horizontal shaft, remove oil cap (11) and/or oil seal (1). Replace with new one (see Seal Replacement, page 25).
4. Fill gearbox with SAE 80W or 90W gear lube until it runs out the level plug.

### Remove Gearbox from Mower

1. Disconnect and remove the rear driveline from the gearbox.
2. Remove vent plug (15), Figure 10, and siphon gear lube from housing through this opening.
3. Remove gearbox stand (2) from mower deck by removing four hex screws (8).
4. Remove four cap screws (14) and washers (13) and remove shield (12) from gearbox.
5. Remove castle nut (6) and hardware from output shaft of gearbox.
6. Remove sheave (3) from gearbox.
7. Remove four bolts (10) that attach gearbox to gearbox stand and remove gearbox.



**Figure 10.** Gearbox Stand Assembly

### Disassemble Gearbox

**Refer to Figure 11.**

1. Remove top cover (28) from housing. Turn gearbox upside down and pour out remaining gear oil from gearbox.
2. Remove oil cap (11) (to be replaced).
3. Remove snap ring (10) and shim (9) from input shaft (5).
4. Support gearbox in hand press and push on input shaft (5) to remove bearing (8).
5. Remove gear (7) from inside housing.
6. Remove oil seal (1) from front of housing (to be replaced).
7. Remove snap ring (2) and shim (3) from front of housing.
8. Remove input bearing (4) by using a punch and hammer from outside of housing.
9. Support housing in vise in a horizontal position.
10. The castle nut (23) and cotter pin (24) are already removed with the drive sheave. Remove the snap ring (18) and seal (19).
11. Remove output shaft (12) and bearings by using a punch and hammer and tap on top to drive down.
12. Inspect gears for broken teeth and wear. Some wear is normal and will show on laded side. Forged gear surfaces are rough when new. Check that wear pattern is smooth.
13. Inspect vertical and horizontal shafts for grooves, nicks, or bumps in the areas where the seals seat. Resurface any damage with emery cloth.
14. Inspect housing and caps for cracks or other damage.

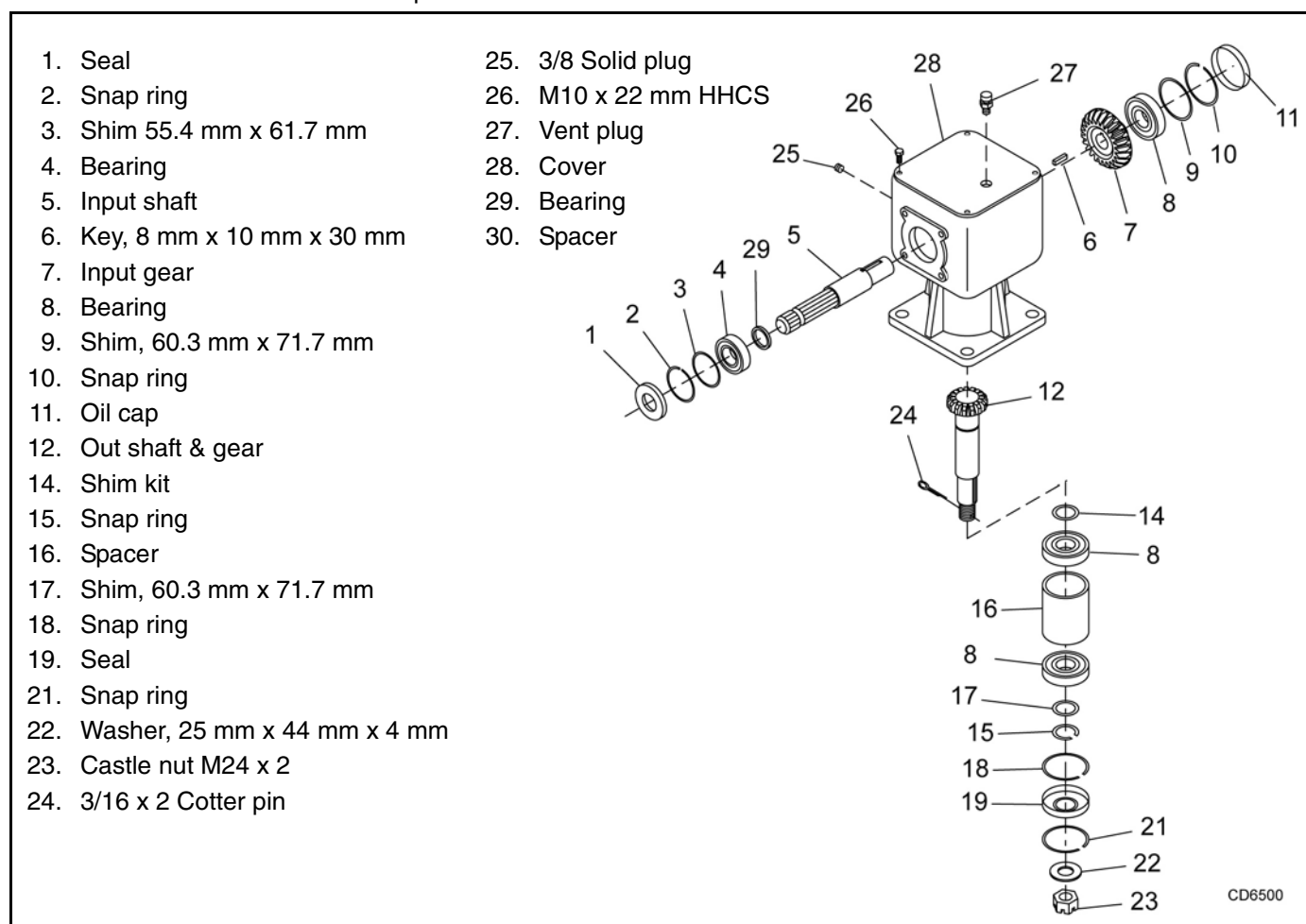
### Reassemble Gearbox

**NOTE:** Repair to this gearbox is limited to replacing bearings, seals, and gaskets. Replacing gears, shafts, and a housing is not cost effective. Purchasing a complete gearbox is more economical.

1. Clean housing, paying special attention to areas where seals will be installed.
2. Wash housing and component thoroughly. Select a clean area for gearbox assembly. Replace all seals and bearings. All parts must be clean and lightly oiled before reassembling.
3. Install shims (14), upper output bearing (8), spacer (16), lower output bearing (8), shims (17), and snap ring (15) on output shaft. Use new shims equal to the thickness of the original shims.



4. Press output shaft assembly into housing from the bottom opening.
5. Install snap ring (18) in bottom of housing.
6. Apply grease to lower seal lips (19), and press seal over output shaft (5), using a round tube of the correct diameter. Be sure not to damage the seal lip. Press in housing so that the seal is recessed.
7. Install snap ring (21) and position it together with seal (19) by pressing it into position. Verify that the snap ring is seated properly.
8. Press bearing (8) into the housing, using a round tube of the correct diameter and a hand press. Secure with shims (9) and snap ring (10).
9. Install key (6) on input shaft (5).
10. Place gear (7) through top of housing and align the two gears so they match.
11. While holding gear (7) in place, slide input shaft (5) through the gear and bearing (8).
12. Slide spacer (29) and bearing (4) over input shaft (5) and press into housing, using a round tube of the correct diameter and a hand press.
13. Slide shim (3) over input shaft and secure with snap ring (2).
14. Check input shaft end float by moving the input shaft by hand. If the end float is more than .012", insert shim (9) between the rear bearing (8) and snap ring (10).
15. Check that gear backlash is between .006" and .016". You should not have to adjust the backlash.
16. Press in input seal (1), using a round tube of the correct diameter. Be careful not to damage the seal lip.
17. Press oil cap (11) on to the rear cover of housing, using a round tube of the correct diameter.
18. Check the gearbox housing for leaks by plugging all holes except one. Apply 4 psi compressed air and immerse the gearbox in water to verify that there are no leaks.
19. Remove the gearbox from water and dry off with compressed air. Add SAE 80W or 90W EP oil until it runs out of the side level hole. Tighten all plugs.



**Figure 11.** Gearbox Assembly

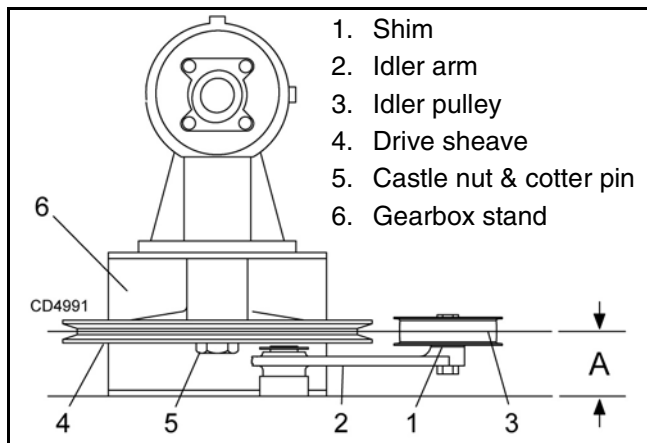
## Install Gearbox

**NOTE:** Gearbox is heavy: do not attempt to move without mechanical assistance.

1. Set gearbox on gearbox stand and fasten with bolts and nuts. Torque bolts to 175 lbs-ft.
2. Attach drive sheave to output shaft. Secure using castle nut and hardware previously removed.
3. Attach gearbox stand to mower using four hex screws.

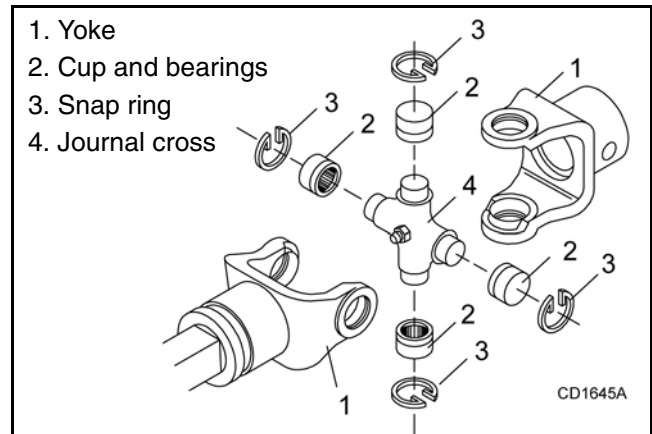
## Install Drive Sheave

1. When gear stand is installed on mower, dimension A (from the top of the mower deck to the center line of the drive pulley) must be 2-1/16" ( $\pm 1/32$ "). This is a critical dimension and must be carefully adjusted for proper belt life. Add or subtract shim washers under idler pulley to align with drive pulley.
2. Tighten gear stand hardware.
3. Fill gearbox half full with SAE 90W gear lube.
4. Check level after waiting five minutes to permit lube to work through bearings. Add lube, if necessary, until gearbox is half full.
5. Replace driveline shield. Attach driveline to gearbox.



**Figure 12.** Drive Sheave Installation

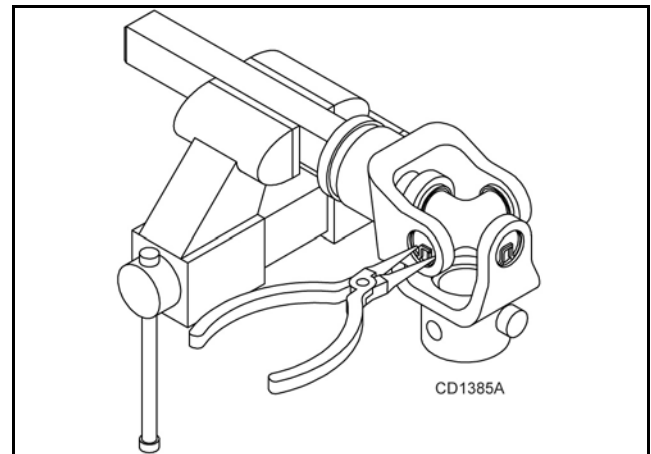
## UNIVERSAL JOINT REPAIR



**Figure 13.** U-Joint Exploded View

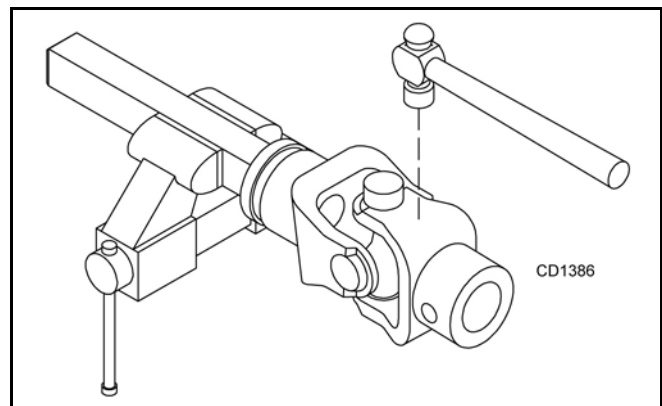
## U-Joint Disassembly

1. Remove external snap rings from yokes in four locations as shown in Figure 14.



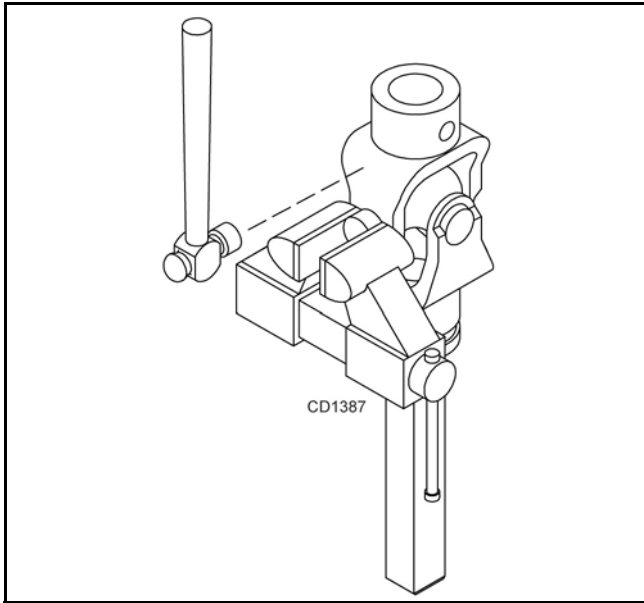
**Figure 14**

2. With snap rings removed, support drive in vise, hold yoke in hand and tap on yoke to drive cup up out of yoke. See Figure 15.



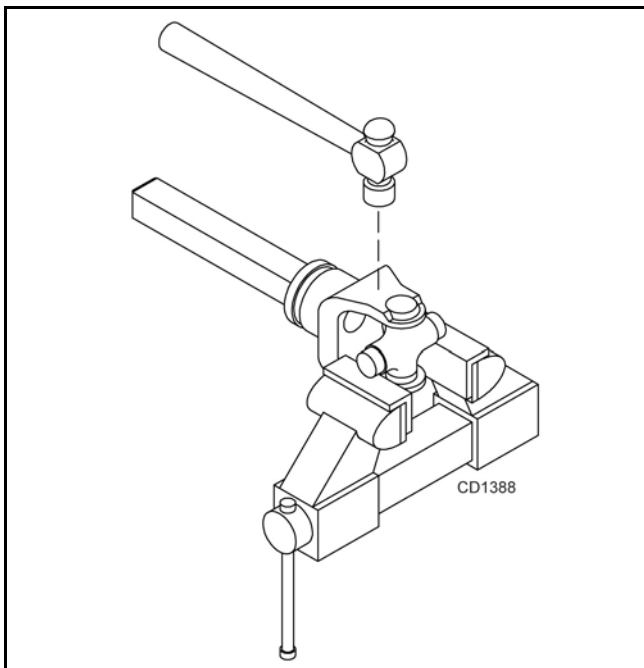
**Figure 15**

3. Clamp cup in vise as shown in 4. and tap on yoke to completely remove cup from yoke. Repeat Step 2 & Step 3 for opposite cup.



**Figure 16**

4. Place universal cross in vise as shown in Figure 17 and tap on yoke to remove cup. Repeat Step 3 for final removal. Drive remaining cup out with a drift and hammer.



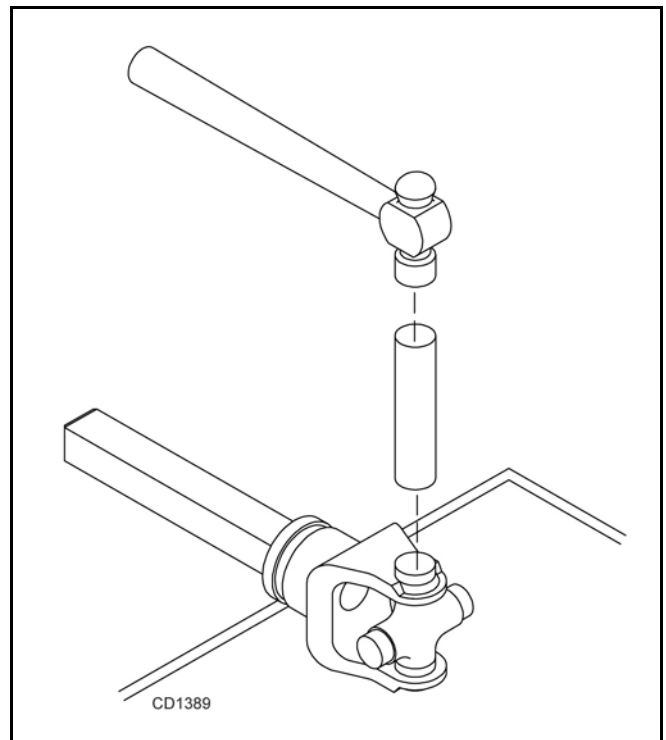
**Figure 17**

## U-Joint Assembly

1. Place seals securely on bearing cups. Insert cup into yoke from outside and press in with hand pressure as far as possible. Insert journal cross into bearing cup with grease fitting away from

shaft. Be careful not to disturb needle bearings. Insert another bearing cup directly across from first cup and press in as far as possible with hand pressure.

2. Trap cups in vise and apply pressure. Be sure journal cross is started into bearings and continue pressure with vise, squeezing in as far as possible. Tapping the yoke will help.
3. Seat cups by placing a drift or socket (slightly smaller than the cup) on cup and rap with a hammer. See Figure 18. Install snap ring and repeat on opposite cup.
4. Repeat Step 1 & Step 2 to install remaining cups in remaining yoke.
5. Move both yokes in all directions to check for free movement. If movement is restricted, rap on yokes sharply with a hammer to relieve any tension. Repeat until both yokes move in all directions without restriction.



**Figure 18**

# ASSEMBLY INSTRUCTIONS

## DEALER SET-UP INSTRUCTIONS

The mower is shipped mostly assembled but requires dealer set-up. The Woods dealer should deliver the mower to the owner completely assembled, lubricated, and adjusted for normal conditions.

Recommended torque values for hardware are located on page 50.

Complete check lists on page 33 when assembly is complete.

### **WARNING**

■ Keep hands and body away from pressurized lines. Use paper or cardboard, not hands or other body parts to check for leaks. Wear safety goggles. Hydraulic fluid under pressure can easily penetrate skin and will cause serious injury or death.

■ Make sure that all operating and service personnel know that if hydraulic fluid penetrates skin, it must be surgically removed as soon as possible by a doctor familiar with this form of injury or gangrene, serious injury, or death will result. **CONTACT A PHYSICIAN IMMEDIATELY IF FLUID ENTERS SKIN OR EYES. DO NOT DELAY.**

■ Make sure spring-activated locking pin or collar slides freely and is seated firmly in tractor PTO spline groove.

### **CAUTION**

■ Always wear relatively tight and belted clothing to avoid getting caught in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head; and respirator or filter mask where appropriate.

## Remove Shipping Straps

1. Remove CV drive from rear wing frame.
2. Attach drive to splitter gearbox. Position CV joint towards the tractor. See page 36 for orientation.
3. Remove shipping straps from front and rear of right and left wing decks.

4. Remove parking jack from storage position on left wing.
5. Attach parking jack to trailer tongue frame.
6. Remove wood block from hitch.

## Attach Hydraulic Hoses

### **WARNING**

■ Air in hydraulic systems can cause erratic operation and allows loads or equipment components to drop unexpectedly. When connecting equipment or hoses or performing any hydraulic maintenance, purge any air in hydraulic system by operating all hydraulic functions several times. Do this before putting into service or allowing anyone to approach the equipment.

Attach the mower hydraulic hose to the tractor port. Hydraulic quick coupler is not supplied.

**NOTE:** The mower hydraulic system should have been filled at the factory. Always assume it is empty. Fully purge air and fill the hydraulic system by raising and lowering wings several times while hooked to a tractor hydraulic supply. Keep all personnel away while raising and lowering.

## OPTIONAL EQUIPMENT

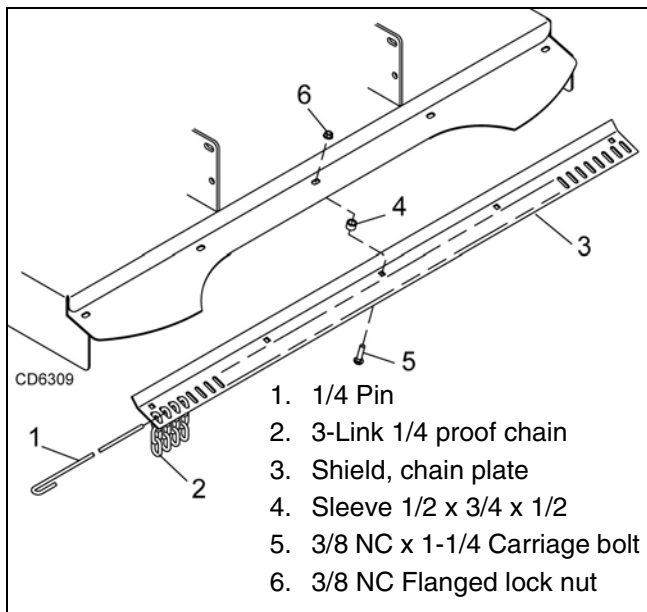
### Chain Shielding Installation

### **DANGER**

■ Full chain shielding must be installed when operating in populated areas or other areas where thrown objects could injure people or damage property.

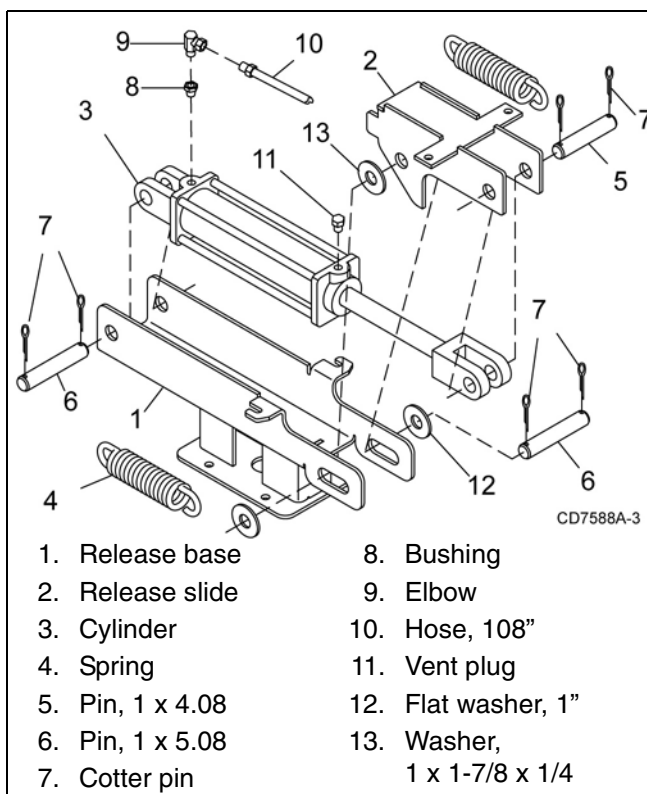
- If this machine is not equipped with full chain shielding, operation must be stopped when anyone comes within 300 feet (92 m).
- This shielding is designed to reduce the risk of thrown objects. The mower deck and protective devices cannot prevent all objects from escaping the blade enclosure in every mowing condition. It is possible for objects to ricochet and escape, traveling as much as 300 feet (92 m).

1. Install chain shielding plate (3) to rear mower frame as shown.
2. Secure with carriage bolts (14) and flanged lock nuts (15).
3. Insert carriage bolts from bottom upward as shown.



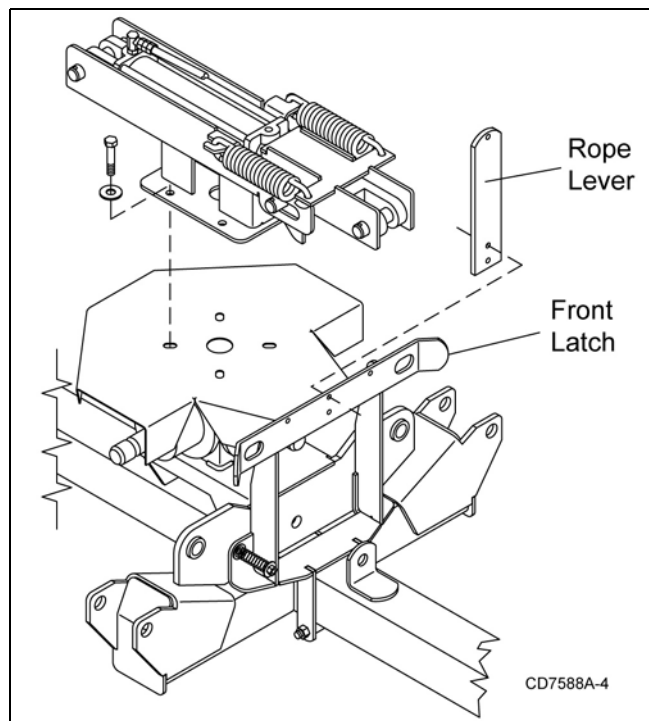
**Figure 19.** Chain Shielding Installation

## Hydraulic Latch Release Installation



**Figure 20.** Hydraulic Latch Release Installation

1. Remove rope lever from the top of front latch.
2. Remove plugs from front and rear ports on cylinder and extend cylinder rod.
3. Install vent plug (11) in port near rod end.
4. Place release slide (2) over clevis on rod end of cylinder (3) and secure using pin (5) and two cotter pins (7).
5. Attach base end of cylinder to release base (1) using pin (6) and cotter pins (7).
6. Extend cylinder and align release slide (2) with release base (1). Insert pin (6), two washers (13) and secure using two flat washers (12) cotter pins (7) on the out side.
7. Attach springs (4) between base (1) and slide (2).
8. Install bushing (8) and elbow (9) into port at base of cylinder.
9. Remove the four bolts and washers from the top of gearbox shield.
10. Place latch assembly over gearbox shield, align holes and secure using the hardware previously removed.
11. Remove latch rope from between front latch and tractor.
12. Attach hydraulic hose (10) to elbow (9). Attach male quick coupler to opposite end of hose. NOTE: quick coupler is not included in this kit.



**Figure 21.** Latch Release to Trailer Connection

## Mulch Kit Installation

**NOTE:** Do not tighten hardware until mulch kit is completely installed.

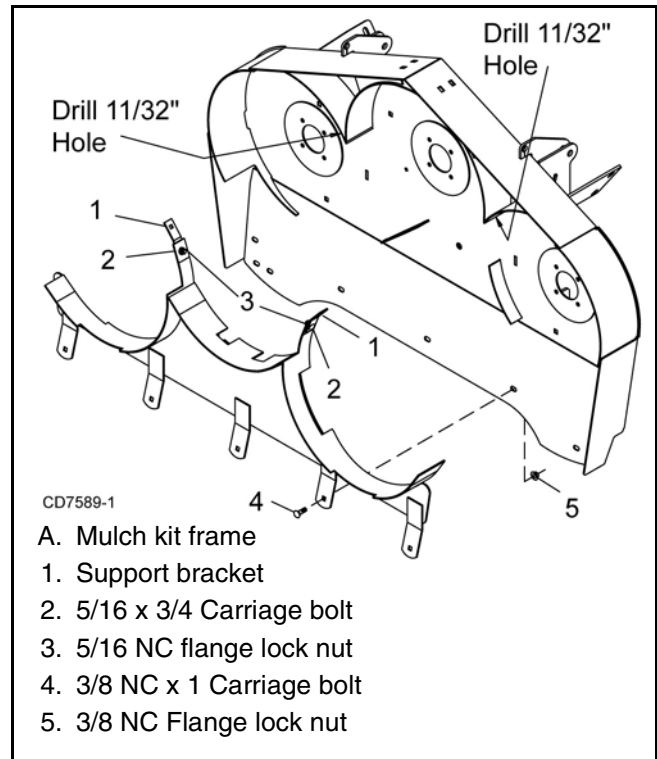
1. Raise deck and lock into transport position.

**NOTE:** Make sure deck is stable before proceeding.

2. Remove chain shielding if installed. Chain shielding is not required when using mulch kit.
3. Attach mulch kit frame to bottom of deck using carriage bolts (4) and flange lock nuts (5). Make sure head of carriage bolts are on the underside of the deck.

**NOTE:** Rotate blades and check for interference with mulch kit frame. Failure to do so could result damage or possible injury once mower is operated. Adjust frame as necessary.

4. Attach the two support brackets (1) to the mulch kit frame using carriage bolts (2) and flange lock nuts (3). Make sure head of carriage bolt are on the blade side of the frame.
5. Using the support brackets as a template mark and drill two 11/32" holes into the deck baffles.
6. Secure support brackets to baffles using carriage bolts (2) and flange lock nuts (3). Make sure head of carriage bolts are on the blade side of the frame.
7. Tighten all hardware.



**Figure 22.** Mulch Kit Installation





# DEALER CHECK LISTS

## **PRE-DELIVERY CHECK LIST** **(DEALER'S RESPONSIBILITY)**

Inspect the equipment thoroughly after assembly to ensure it is set up properly before delivering it to the customer.

The following check lists are a reminder of points to inspect. Check off each item as it is found satisfactory or after proper adjustment is made.

- \_\_\_ Check that all safety decals are installed and in good condition. Replace if damaged.
- \_\_\_ Check that shields and guards are properly installed and in good condition. Replace if damaged.
- \_\_\_ Check all bolts to be sure they are properly torqued.
- \_\_\_ Check that all cotter pins and safety pins are properly installed. Replace if damaged.
- \_\_\_ Check that blades have been properly installed.
- \_\_\_ Check mower attitude and belt alignment
- \_\_\_ Check and grease all lubrication points as identified in lubrication information on page 18.
- \_\_\_ Check the level of gearbox fluids before delivery. Service, if required, as specified in the lubrication information on page 18.

## **DELIVERY CHECK** **(DEALER'S RESPONSIBILITY)**

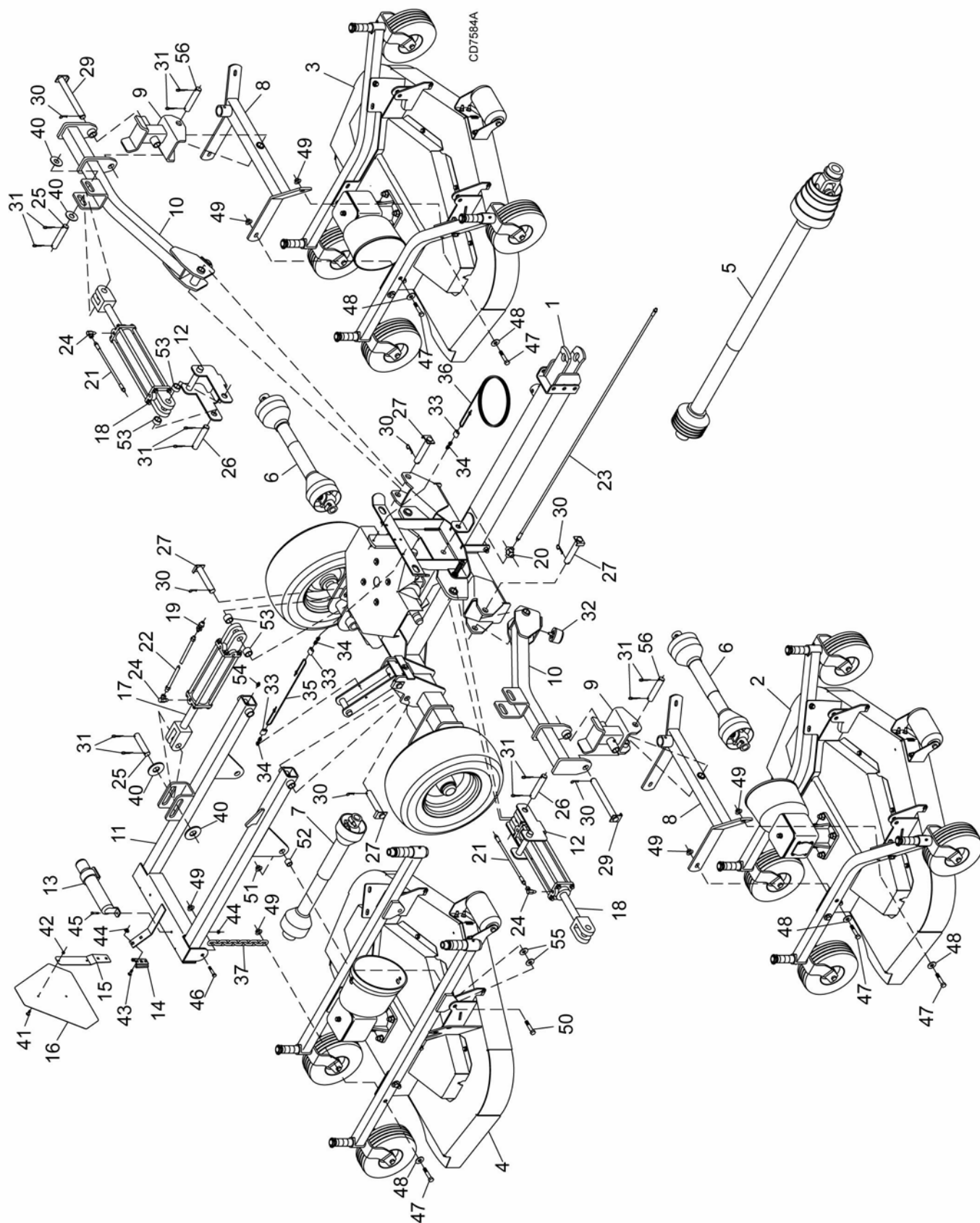
- \_\_\_ Show customer how to make adjustments and select proper PTO speed.
- \_\_\_ Show customer how to make sure driveline is properly installed and that spring-activated locking pin or collar slides freely and is seated in groove on tractor PTO shaft.
- \_\_\_ Show customer how to determine the turning limits of the CV PTO driveline.
- \_\_\_ Show customer the safe, proper procedures to be used when mounting, dismounting, and storing equipment.
- \_\_\_ Make customer aware of optional equipment available so that customer can make proper choices as required.
- \_\_\_ Instruct customer how to lubricate and explain importance of lubrication.
- \_\_\_ Point out the safety decals. Explain their meaning and the need to keep them in place and in good condition. Emphasize the increased safety hazards when instructions are not followed.
- \_\_\_ Present Operator's Manual and request that customer and all operators read it before operating equipment. Point out the manual safety rules, explain their meanings and emphasize the increased safety hazards that exist when safety rules are not followed.
- \_\_\_ Explain to customer the potential crushing hazards of going underneath raised equipment.
- \_\_\_ Point out all guards and shields. Explain their importance and the safety hazards that exist when not kept in place and in good condition.

# NOTES

### Turf Batwing Mower TBW 150C

MAIN FRAME ASSEMBLY .....	36 & 37
DECK ASSEMBLY .....	38 & 39
TRAILER FRAME ASSEMBLY .....	40
GEARBOX ASSEMBLY.....	41
BLADE & SPINDLE ASSEMBLY.....	42
WING DRIVE ASSEMBLY.....	43
REAR DRIVE ASSEMBLY .....	44
CV DRIVE ASSEMBLY .....	45
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HYDRAULIC CYLINDER.....	47
REAR CHAIN SHIELDING ASSEMBLY (OPTIONAL) .....	48
HYDRAULIC LATCH RELEASE KIT (OPTIONAL) .....	48
MULCH KIT (OPTIONAL) .....	49

# MAIN FRAME ASSEMBLY



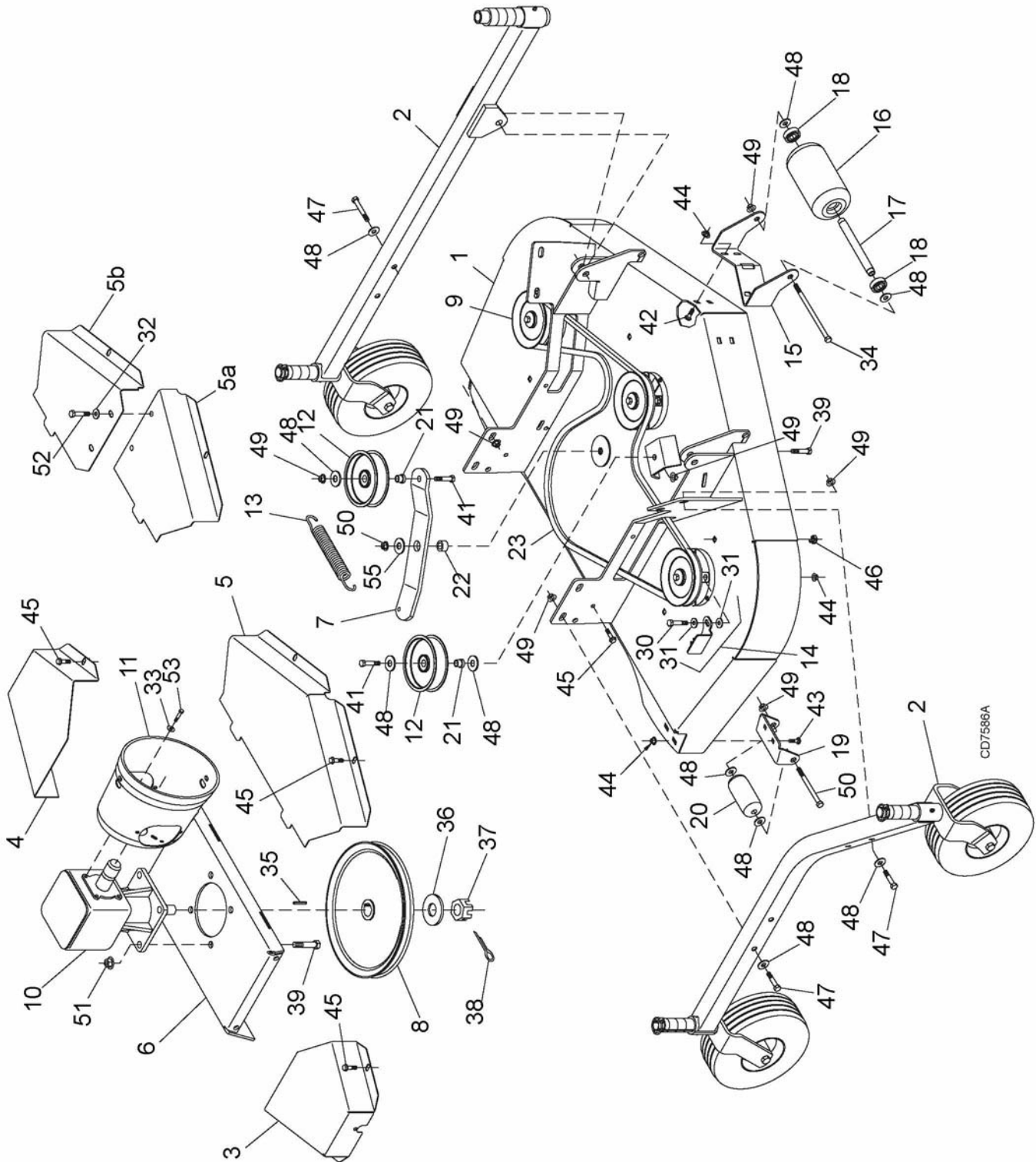
**36 Parts**

(Rev. 2/6/2009)  
MAN0765 (12/5/2008)

## MAIN FRAME ASSEMBLY PARTS LIST

REF	PART	QTY	DESCRIPTION	REF	PART	QTY	DESCRIPTION
1	-----	1	Trailer assembly (see page 40)	27	38001	4	Pin, Wing hinge
2	-----	1	Right deck assembly (see page 38)	28	1029548	2	Pin, 1 x 5.03
3	-----	1	Left deck assembly (see page 38)	29	1029549	2	Pin, 1 x 9.09
4	-----	1	Center deck assembly (see page 38)	30	18270	*	Pin, Safety 3/16
5	1029868	1	CV drive - 540 RPM (see page 45)	31	1285	*	1/4 x 1-1/2 Cotter pin
6	1020903	2	Drive, Cmpl 40, 22.1 x 31.9 (see page 43)	32	62440	2	Bumper Pad
7	1009508	1	Drive, Cmpl 40, 29.9 x 44.9 (see page 44)	33	38295	3	Rope Clamp
8	1029481	2	Frame, wing deck lift	34	38257	3	S-Hook, .25 x 2.25
9	1029495	2	Frame, wing deck link	35	1029853	1	Rope, .25 x 31.0
10	1029485	2	Frame, wing deck	36	38296	1	Rope, .25 x 95.0
11	1029855	1	Frame, center deck	37	1016953	2	5/16 Chain - 11 link
12	1029493	2	Lock, wing cylinder	38	1029540	1	Complete decal set
13	1026530	1	Manual tube	39	1029541	1	Safety decal set
14	62484	1	SMV Socket	40	832	*	1" Standard flat washer
15	1004251	1	SMV Bracket	41	1282	*	1/4 NC x 1/2 Round head screw
16	24611	1	SMV Emblem	42	5288	*	1/4 NC Hex nut
17	29547	1	Hydraulic cylinder 3 x 8 (see page 47)	43	16148	*	5/16 NC x 3/4 Carriage bolt
18	1019460	2	Hydraulic cylinder 3 x 10 (see page 47)	44	14139	*	5/16 NC Flange lock nut
19	1006400	1	Bulkhead fitting, 9/16 JICM x 1/4 NPTM	45	14562	*	5/16 NC x 1 HHCS GR5
20	1006401	1	Cross, 9/16 JICM x 1/4 NPTF	46	3379	*	1/2 NC x 1-1/2 HHCS GR5
21	1006402	2	Hose, 33" x 9/16 JICF X 9/16 JICM	47	1637	*	1/2 NC x 3-1/2 HHCS GR5
22	1006403	1	Hose, 48" x 9/16 JICF x 9/16 JICM	48	3598	*	1/2 Flat washer
23	1006404	1	Hose, 108" x 9/16 JICF x 1/4 NPTM	49	11900	*	1/2 NC Flange lock nut
24	1006405	3	Elbow, 9/16 JICF x 1/2 NPTM 90° w/3/32 Restrictor	50	378		5/8 NC x 5 HHCS
25	8345	3	1 x 4.08 Headless pin	51	19025	*	5/8 NC Flange lock nut
26	8347	2	1 x 5.08 Headless pin	52	12313		.625 x 1 x .789 HT Sleeve
				53	33647	6	Spacer, 3/4
				54	12296	*	1/4-28 Grease fitting
				55	692	*	5/8 Standard flat washer
				56	8348	2	1 x 5.58 Headless pin
					HHCS		Hex Head Cap Screw
					*		Standard hardware, obtain locally

# DECK ASSEMBLY



**38 Parts**

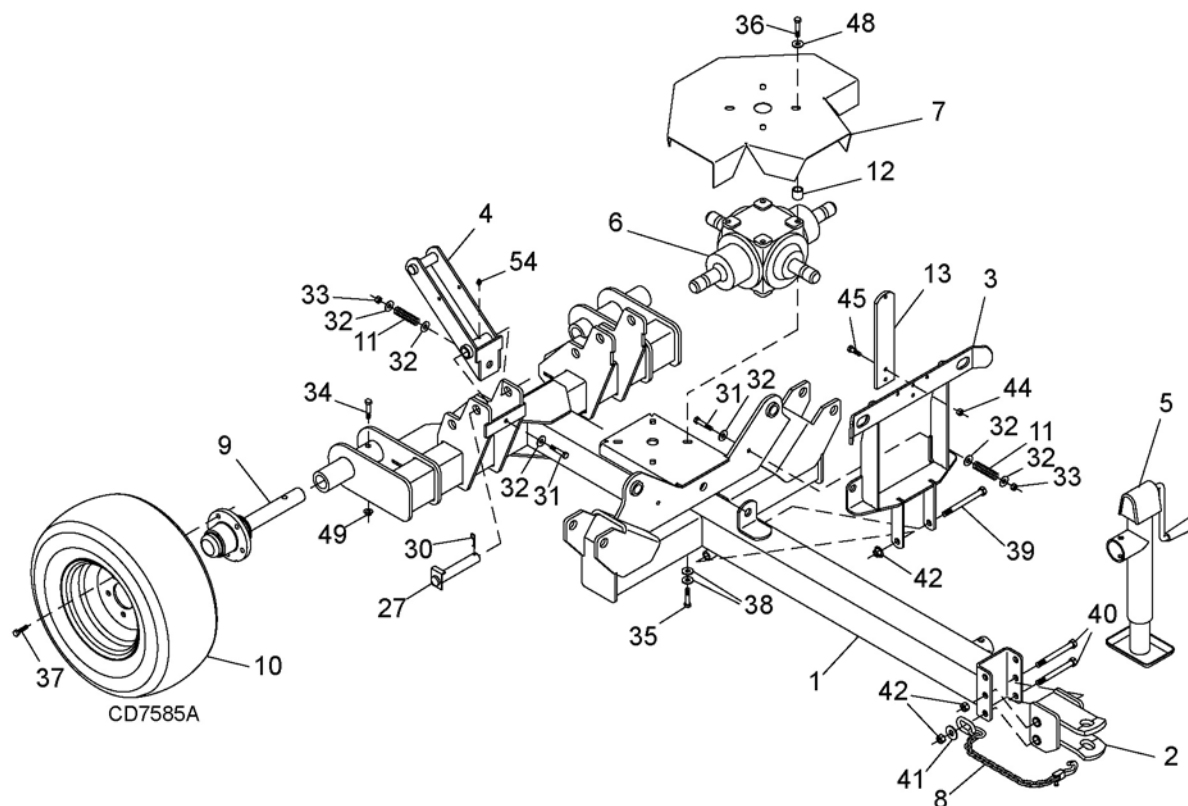
(Rev. 2/6/2009)  
MAN0765 (12/5/2008)

## DECK ASSEMBLY PARTS LIST

REF	PART	QTY	DESCRIPTION	REF	PART	QTY	DESCRIPTION
1	-----	1	54" Mower deck	22	484	1	Sleeve .625 x 1.00 x .438
2	-----	2	Caster tube, Rear Deck <b>(see page 46)</b>	23	20644	1	Belt
			- or -	30	3231	*	3/8 NC x 2 HHCS GR5
2	-----	2	Caster tube, Wing Deck <b>(see page 46)</b>	31	21575	*	3/8 SAE Flat washer
3	1008022	1	Right shield	32	565	*	3/8 Standard flat washer
4	1008023	1	Left shield	33	4378	*	5/16 Standard flat washer
5	1008024	1	Center shield, wing deck	34	38107		1/2 NC x 9 HHCS GR5
5a	1031170	1	Center shield, right half, rear deck	35	6593	*	1/4 x 1/4 x 1 Key
5b	1031171	1	Center shield, left half, rear deck	36	20893		25 x 44 x 4 mm Flat washer
6	1008028	1	Gearbox stand	37	51946		M24 x 2 Hex castle nut
7	1008044	1	Idler arm	38	64803	*	3/16 x 2 Cotter pin
8	1008056	1	Gearbox sheave	39	19024		5/8 NC x 1-3/4 HFS GR5
9	-----	3	Spindle <b>(see page 42)</b>	41	24576	*	1/2 NC x 1-3/4 HHCS GR5
10	1006649	1	Gearbox <b>(see page 41)</b>	42	24890	*	3/8 NC x 1-1/4 Carriage bolt
11	1002048	1	Shield, Rear Deck - or -	43	6697	*	3/8 NC x 1 Carriage bolt GR5
11	1029547	1	Shield, Wing Deck	44	14350	*	3/8 NC Flange lock nut
12	67283	2	5" Idler	45	62153		3/8 NC x 1 Hex flange serrated
13	67131	1	Spring	46	1008011		3/8 NC Square nut w/retainer
14	1008181	1	Kit, Belt guide (includes items 30, 31, 44)	47	1637	*	1/2 NC x 3-1/2 HHCS GR5
15	1008034	1	Front roller bracket	48	3598	*	1/2 Flat washer
16	1006418	1	Front roller	49	11900	*	1/2 NC Flange lock nut
17	1006420	1	Spacer	50	12305		1/2 NC x 5-1/2 HHCS GR5
18	35193	2	Bearing	51	19025	*	5/8 NC Flange lock nut
19	1029861	2	Rear roller bracket	52	1686	*	3/8 NC x 3/4 HHCS GR5
20	1029865	2	Rear roller	53	39254		M8 x 1.25 x 16 mm HHCS
21	67284	2	Shoulder sleeve	55	692	*	5/8 Standard flat washer
					HFS		Hex Flange Screw
					HHCS		Hex Head Cap Screw
					*		Standard hardware, obtain locally



## TRAILER ASSEMBLY



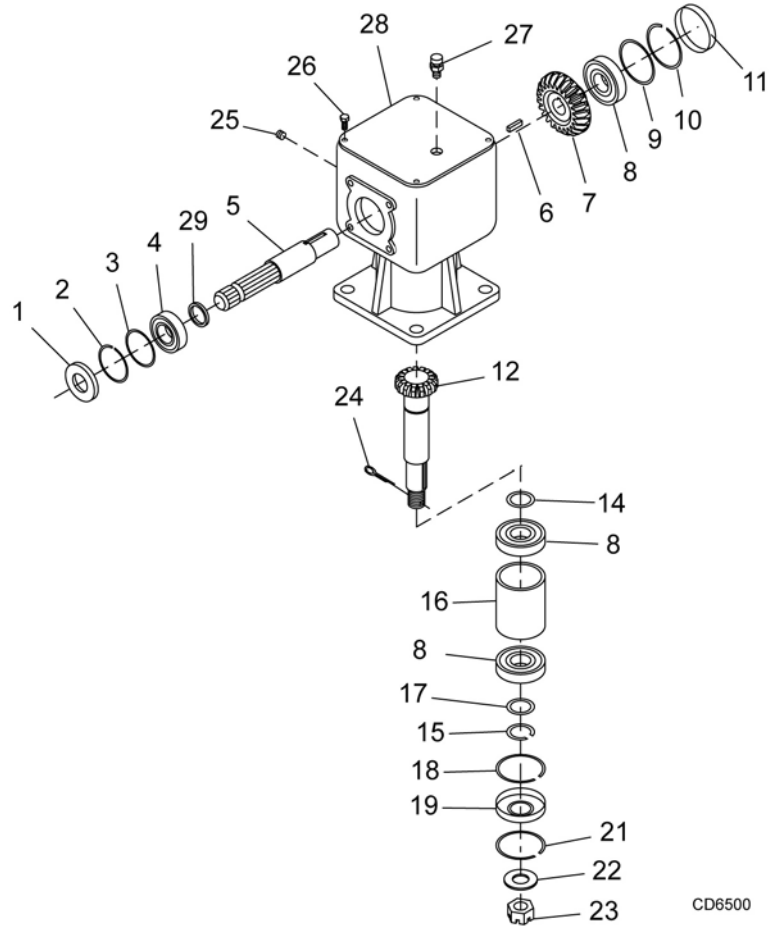
REF	PART	QTY	DESCRIPTION
-----	------	-----	-------------

1	-----	1	Trailer frame
2	1029501	1	Hitch
3	1029518	1	Wing release
4	1029529	1	Lock, rear deck
5	23790	1	Parking jack
6	40933	1	Gearbox, 4-Way Splitter (ITG)
--	58815	2	Seal, Thru Shaft 4-Way Gr Box
--	58816	2	Seal, Wing Shaft 4-Way Gr Box
--	58817	6	Bearing, Cup & Cone 4-Way Box
--	1009083	1	Vent Plug & Washer
6C	40933C	1	Gearbox, 4-Way Splitter (Comer)
--	57462	4	Bearing, Cup & Cone
--	20890	2	Bearing, Ball
--	57463	4	Oil Seal
--	57076	1	Vent Plug
7	44636	1	Shield, Gearbox 4-Way
8	19407	1	Safety chain
9	1001020	2	Wheel Hub & Axle (see page 45)
10	1029854	2	Wheel & Tire, 20.0 x 8.8 x 8.0
11	21957	3	Spring, compression .58 x .08 x 2.4 40
12	62626	4	Sleeve, .76 x 1.00 x 1.00
13	1029542	1	Rope lever

REF	PART	QTY	DESCRIPTION
-----	------	-----	-------------

27	38001	1	Pin, Wing hinge
30	18270	*	Pin, Safety 3/16
31	31138	*	3/8 NC x 3-1/2 HHCS GR5
32	565	*	3/8 Standard flat washer
33	6698	*	3/8 NC Lock nut
34	3489	*	1/2 NC x 3 HHCS GR5
35	6100	*	1/2 NC x 1-1/4 HHCS GR5
36	3699	*	1/2 NC x 2 HHCS GR5
37	1258	*	1/2 NF x 1-1/8 Wheel bolt
38	57811		1/2 Flat washer, extra thick hardened
39	990	*	5/8 NC x 5-1/2 HHCS GR5
40	12005		5/8 NC x 6 HHCS GR5
41	34467		.63 x 2.00 x .38 Flat washer
42	6239	*	5/8 NC Lock nut
44	14139	*	5/16 NC Flange lock nut
45	14562	*	5/16 NC x 1 HHCS GR5
48	3598	*	1/2 Flat washer
49	11900	*	1/2 NC Flange lock nut
54	12296	*	1/4-28 Grease fitting
	HHCS		Hex Head Cap Screw
	*		Standard hardware, obtain locally

## GEARBOX ASSEMBLY



REF	PART	QTY	DESCRIPTION
A	1006649		Complete gearbox
1	39275	1	Seal
2	1007861	1	Snap ring
3	1007865	1	Shim kit
4	51850	1	Ball bearing
5	N/S	1	Input shaft
6	20894	1	Key 8 x 10 x 30 mm
7	N/S	1	Input gear
8	20890	3	Ball bearing
9	1007864	1	Shim kit
10	57466	1	Snap ring
11	57374	1	Oil cap
12	N/S	1	Output shaft & gear
14	1007866	1	Shim kit
15	1007859	1	Snap ring

REF	PART	QTY	DESCRIPTION
16	1007858	1	Spacer
17	1007862	1	Shim kit
18	57466	1	Snap ring
19	57463	1	Seal
21	1007860	1	Snap ring
22	20893	1	Washer 25 x 44 x 4 mm
23	51946	1	Castle nut M24 x 2
24	64803 *	1	3/16 x 2 Cotter pin
25	N/S *	1	3/8 Solid plug
26	N/S *	4	M10 x 22 mm HHCS
27	39325	1	Vent plug
28	1007873	1	Cover
29	1007857	1	Spacer

HHCS Hex Head Cap Screw

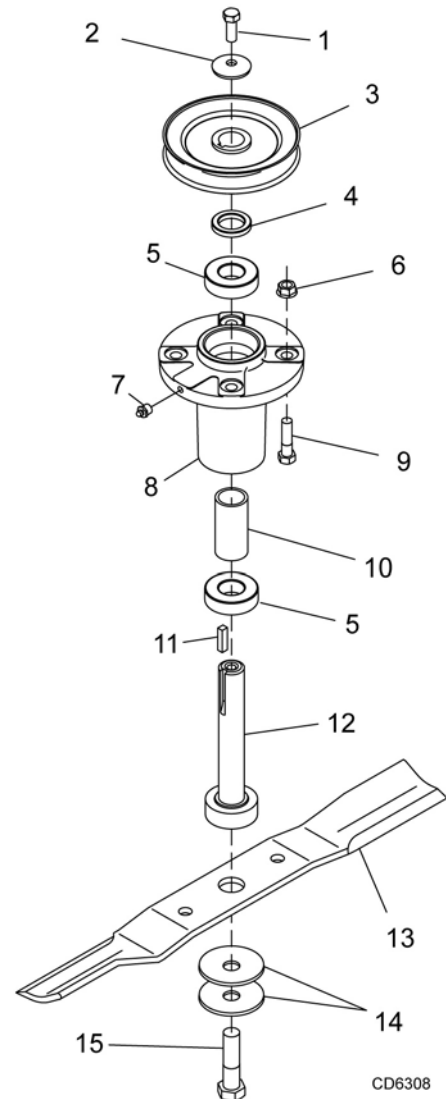
\* Standard hardware, obtain locally

## BLADE & SPINDLE ASSEMBLY

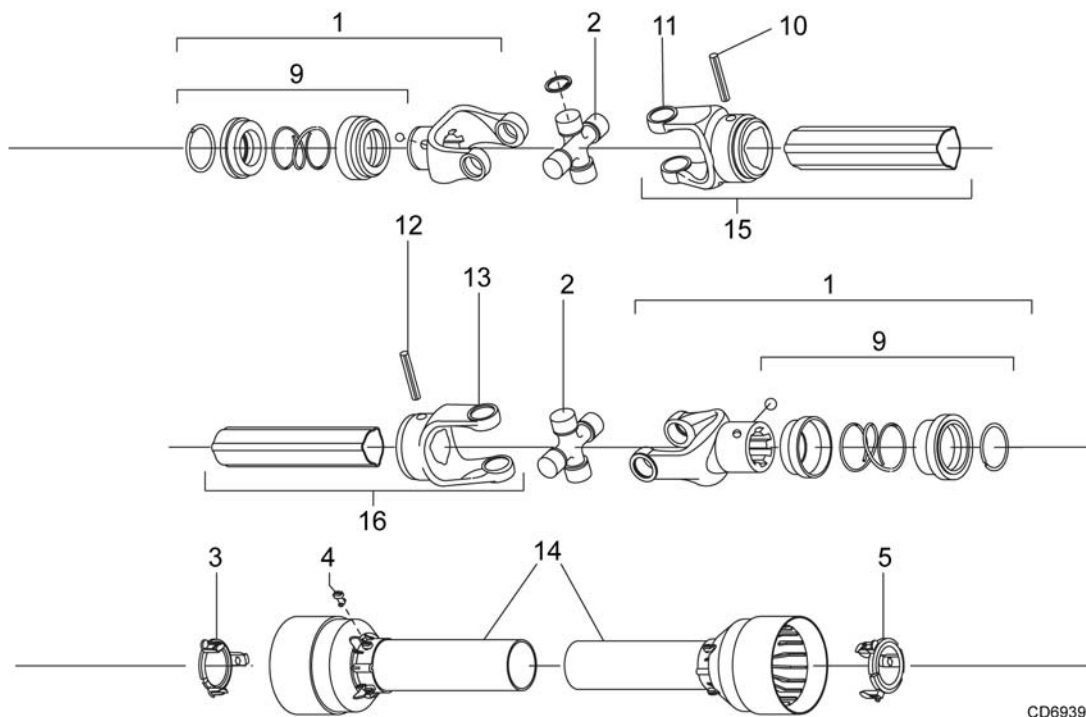
REF	PART	QTY	DESCRIPTION
A	1009080	1	Complete spindle assembly (includes 1, 2, 4, 5 through 12, 14 & 15)
1	64518	1	3/8 NF x 1 HHCS GR5
2	70005	1	Cup washer
3	1008059	1	Sheave
4	1008055	1	Spacer
5	72933	2	Spindle bearing
6	14350 *	4	3/8 NC Flange locknut
7	1972 *	1	1/4 Tapered grease fitting
8	1008053	1	Spindle housing
9	976 *	4	3/8 NC x 1-1/2 HHCS GR5
10	1008052	1	Spacer
11	70072 *	1	Square key
12	1008042	1	Shaft assembly
13	78127KT	1	Blade kit, high suction 18.7" (includes 3 blades)
14	10635	2	Cup washer
15	1008095	1	5/8 NF x 2 HHCS GR5

HHCS Hex Head Cap Screw

\* Standard hardware, obtain locally



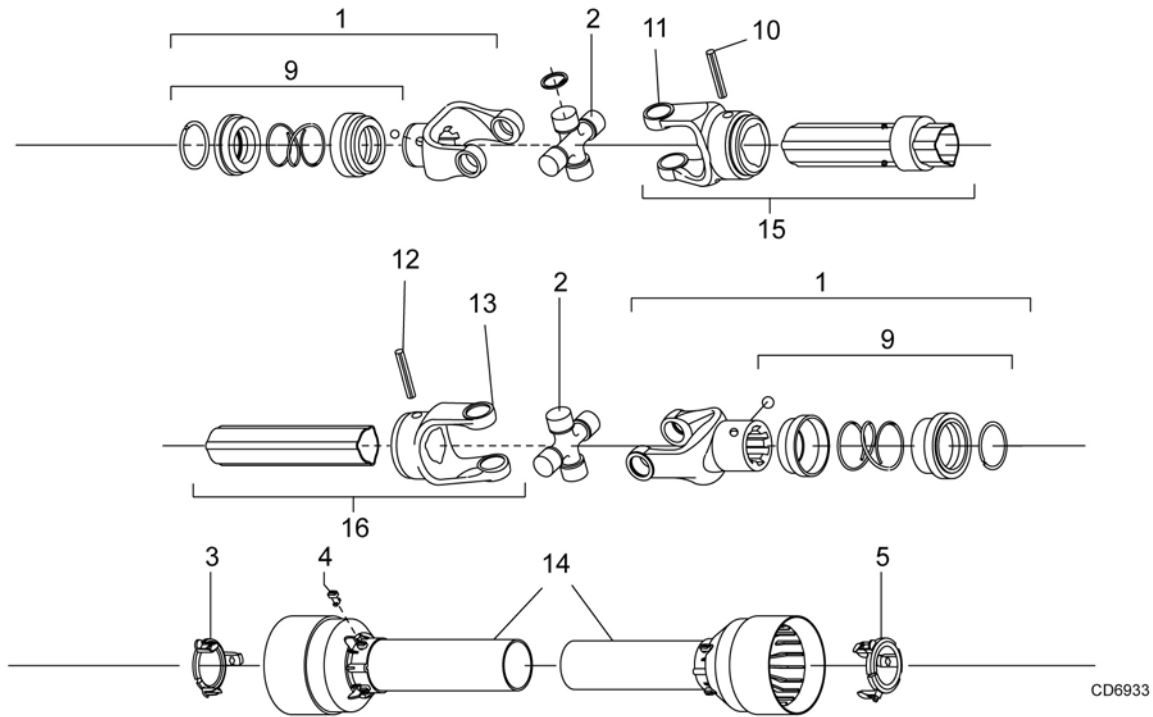
## WING DRIVELINE ASSEMBLY



CD6939

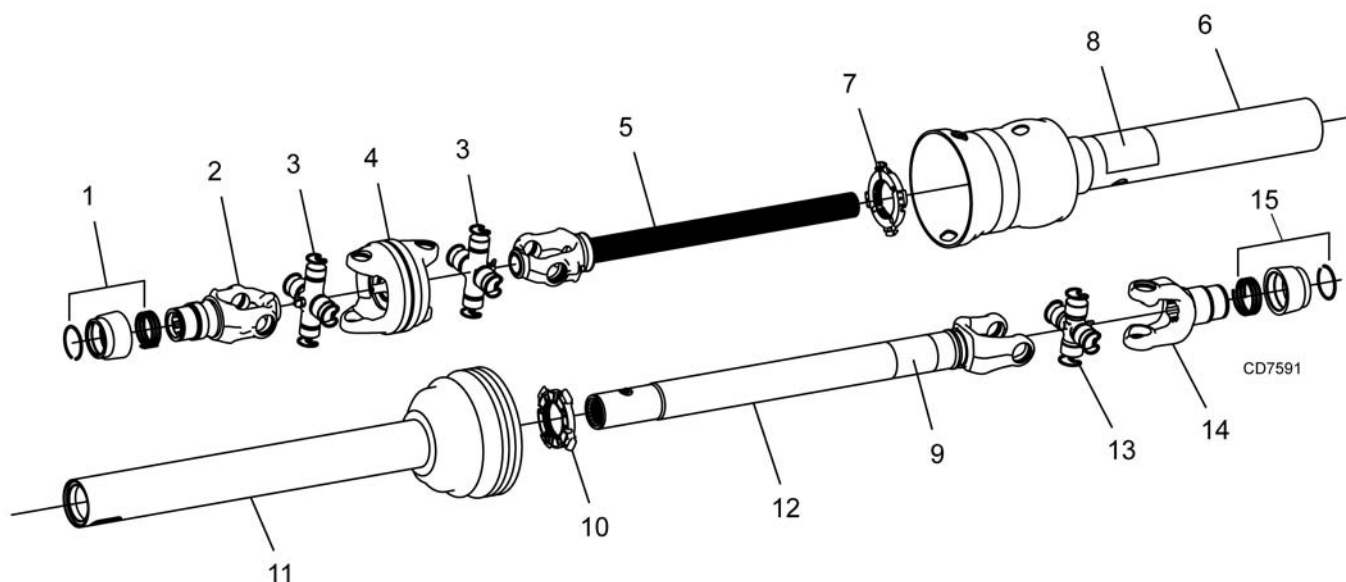
REF	PART	QTY	DESCRIPTION	REF	PART	QTY	DESCRIPTION
A	1020903	1	Complete driveline assembly	10	1001302	1	Flexible pin
1	1001300	2	Complete collar yoke C12 1-3/8 - 6	11	1001301	1	Outer yoke tube
2	38478	2	Cross and bearing kit	12	1001305	1	Flexible pin
3	1019442	1	Outer cone fix ring	13	1001306	1	Inner tube yoke
4	30922	6	Protection fixing screw	14	1021554	1	Complete shield
5	1019444	1	Inner cone fix ring	15	30926	1	Outer yoke & tube (must be cut to length)
9	1001340	1	Lock collar repair kit	16	30932	1	Inner yoke & tube (must be cut to length)

## REAR DRIVELINE ASSEMBLY



REF	PART	QTY	DESCRIPTION	REF	PART	QTY	DESCRIPTION
A	1009508	1	Complete driveline assembly	11	1001301	1	Outer yoke tube
1	1001300	2	Complete collar yoke C12 1-3/8 - 6	12	1001305	1	Flexible pin
2	38478	2	Cross and bearing kit	13	1001306	1	Inner tube yoke
3	1019442	1	Outer cone fix ring	14	1021323	1	Complete shield
4	30922	6	Protective fixing screw	15	30926	1	Outer yoke & tube (must be cut to length)
5	1019444	1	Inner cone fix ring	16	30932	1	Inner yoke & tube (must be cut to length)
9	1001340	1	Lock collar repair kit				
10	1001302	1	Flexible pin				

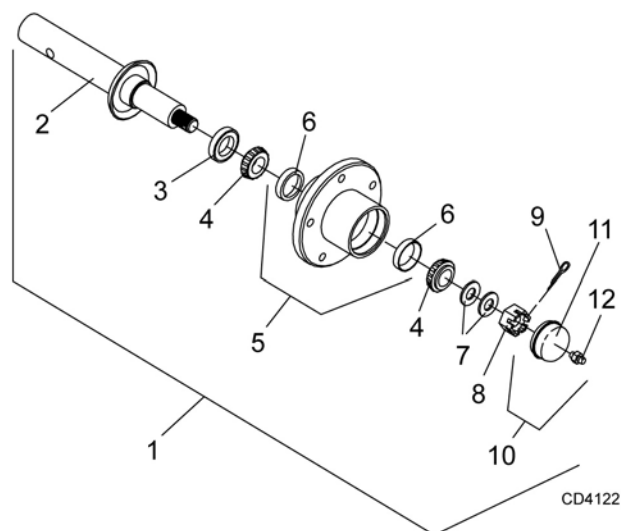
## CV DRIVESHAFT ASSEMBLY



REF	PART	QTY	DESCRIPTION
A	1029868		Complete driveline assembly
1	19851	1	Slide lock repair kit
2	1017362	1	Yoke, QD CV 1-3/8 - 6
3	1017363	2	U-Joint repair kit 14CV
4	1017364	1	CV Body w/fitting 14
5	1017365	1	Yoke & shaft, CV splined 23.6
6	1017366	1	Outer shield CV
7	1024636	1	Drive shaft bearing kit

REF	PART	QTY	DESCRIPTION
8	18864	1	Decal, danger rotating driveline
9	33347	1	Decal, danger guard missing
10	1017367	1	Inner bearing kit
11	1017368	1	Inner shield CV
12	1017369	1	Yoke & tube 14R x 39.3
13	154	1	U-Joint repair kit 14R
14	53858	1	Yoke, 14 x 4.31 x 1.38 QD
15	53857	1	Slide collar repair kit

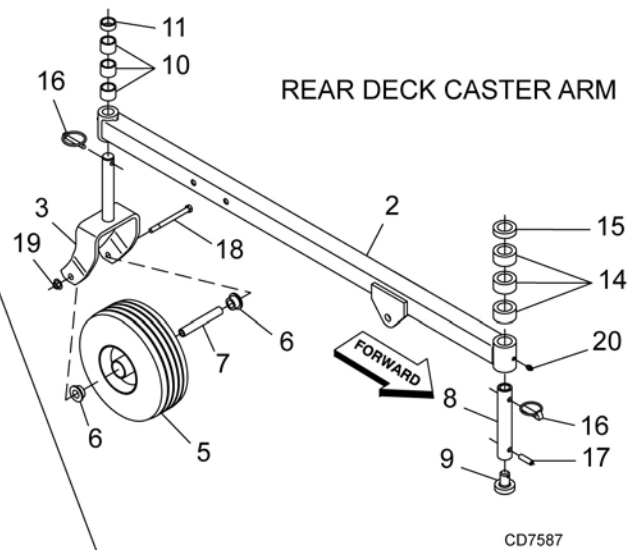
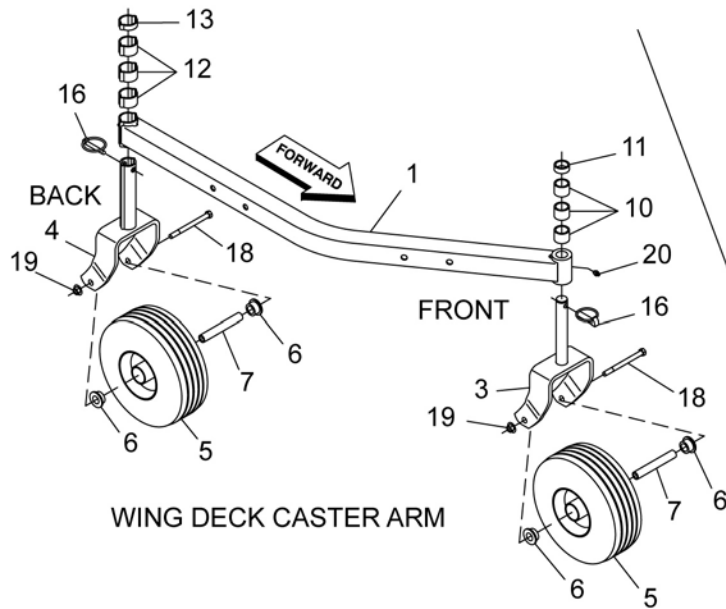
## HUB & AXLE ASSEMBLY



REF	PART	QTY	DESCRIPTION
1	1001020	1	Wheel Hub & Axle Assembly
2	1001021	1	Axle Shaft
3	314	1	Seal, 1.50 x 2.44 x .31
4	2303	2	Bearing, Cone
5	38437	1	Wheel Hub, Housing w/Cups
6	2305	2	Bearing, Cup
7	1257*	2	Washer, Flat 3/4 Standard
8	5849	1	Nut, Slotted Hex 3/4 NF
9	1256*	1	Pin, Cotter 3/16 x 1
10	14133	1	Hub Cap, Assembly w/Fitting
11	531	1	Hub Cap
12	6270*	1	Grease Fitting, 1/4 Tapered Thread

\* Standard hardware, obtain locally

## CASTER WHEEL ASSEMBLY



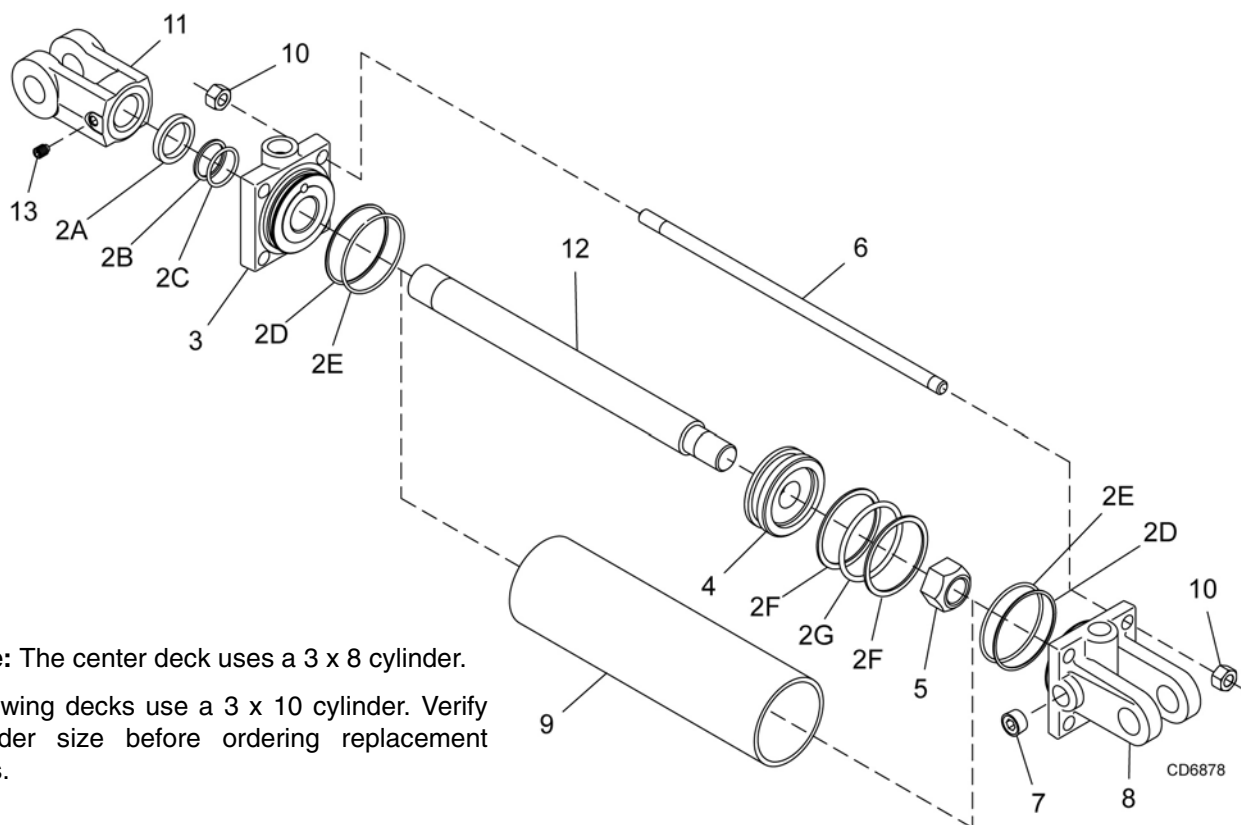
REF	PART	QTY	DESCRIPTION
1	1029476	1	Caster Tube, Wing Deck
2	1029850	1	Caster Tube, Rear Deck
3	1008032	1	Caster yoke - rotating
4	1029478	1	Caster yoke - non-rotating
5	1008096	1 or 2	Wheel 10" solid (includes item 6)
6	65578	2 or 4	Flanged bushing
7	29368	1 or 2	Sleeve 1/2 x 3/4 x 3-3/8
8	1029484	1	Sleeve, drilled .81x 1.25 x 7.34
9	58999	1	Wear pad
10	65130	3 or 6	1" Height spacer for rotating caster

REF	PART	QTY	DESCRIPTION
11	65129	1 or 3	1/2" Height spacer for rotating caster
12	1029873	3	1" Height spacer for non-rotating caster
13	1029874	1	1/2" Height spacer for non-rotating caster
14	52855	3	1" Height spacer for post
15	52853	1	1/2" Height spacer for post
16	27542	2	7/16 Klik pin
17	15134	1	.25 x 1.00 Spirol pin
18	23479	*	1/2 NC x 5 HHCS GR5
19	11900	*	1/2 NC Flange lock nut
20	12296	*	1/4-28 Grease fitting

\* Standard hardware, obtain locally



## HYDRAULIC CYLINDER

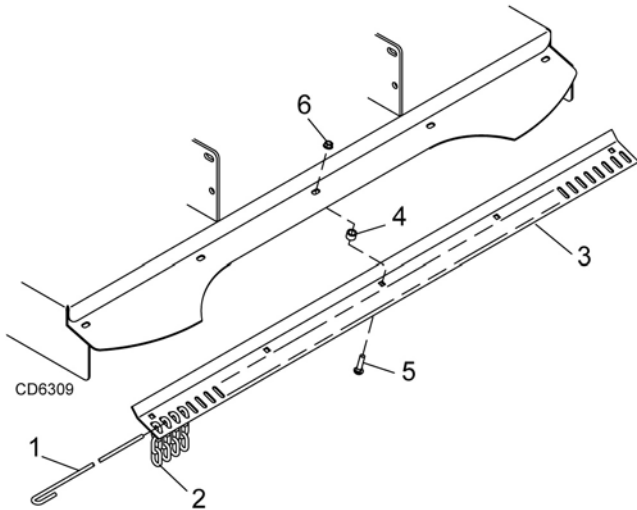


**Note:** The center deck uses a 3 x 8 cylinder.

The wing decks use a 3 x 10 cylinder. Verify cylinder size before ordering replacement parts.

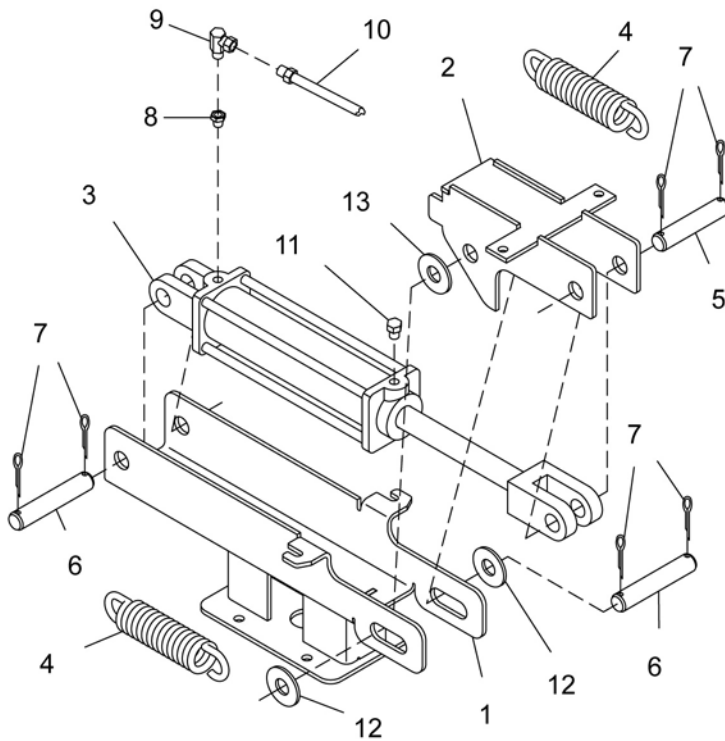
REF	3 x 8 PART	3 x 10 PART	QTY	DESCRIPTION
1	29547	1019460		Complete cylinder
2	19810	19810	1	Seal repair kit (includes items 2A - 2G)
2A	†	†	1	Wiper seal
2B	†	†	1	Rod seal
2C	†	†	1	Rod O-ring
2D	†	†	2	Cap seal
2E	†	†	2	Cap O-ring
2F	†	†	2	Piston seal
2G	†	†	1	Piston O-ring
3	N/S	N/S	1	Cylinder housing - rod end
4	N/S	N/S	1	Piston
5	N/S	N/S	1	Jam nut
6	N/S	N/S	4	Cylinder tie rod
7	*	*	3	1/2 Pipe plug
8	N/S	N/S	1	Cylinder housing - butt end
9	N/S	N/S	2	Cylinder barrel
10	N/S	N/S	8	Tie rod nut
11	N/S	N/S	1	Cylinder clevis
12	N/S	N/S	1	Cylinder rod
13	*	*	1	Set screw 3/8 x 3/4 dog point
				Included in seal kit
				Standard hardware, obtain locally
				Not serviced

## REAR CHAIN SHIELDING (OPTIONAL)



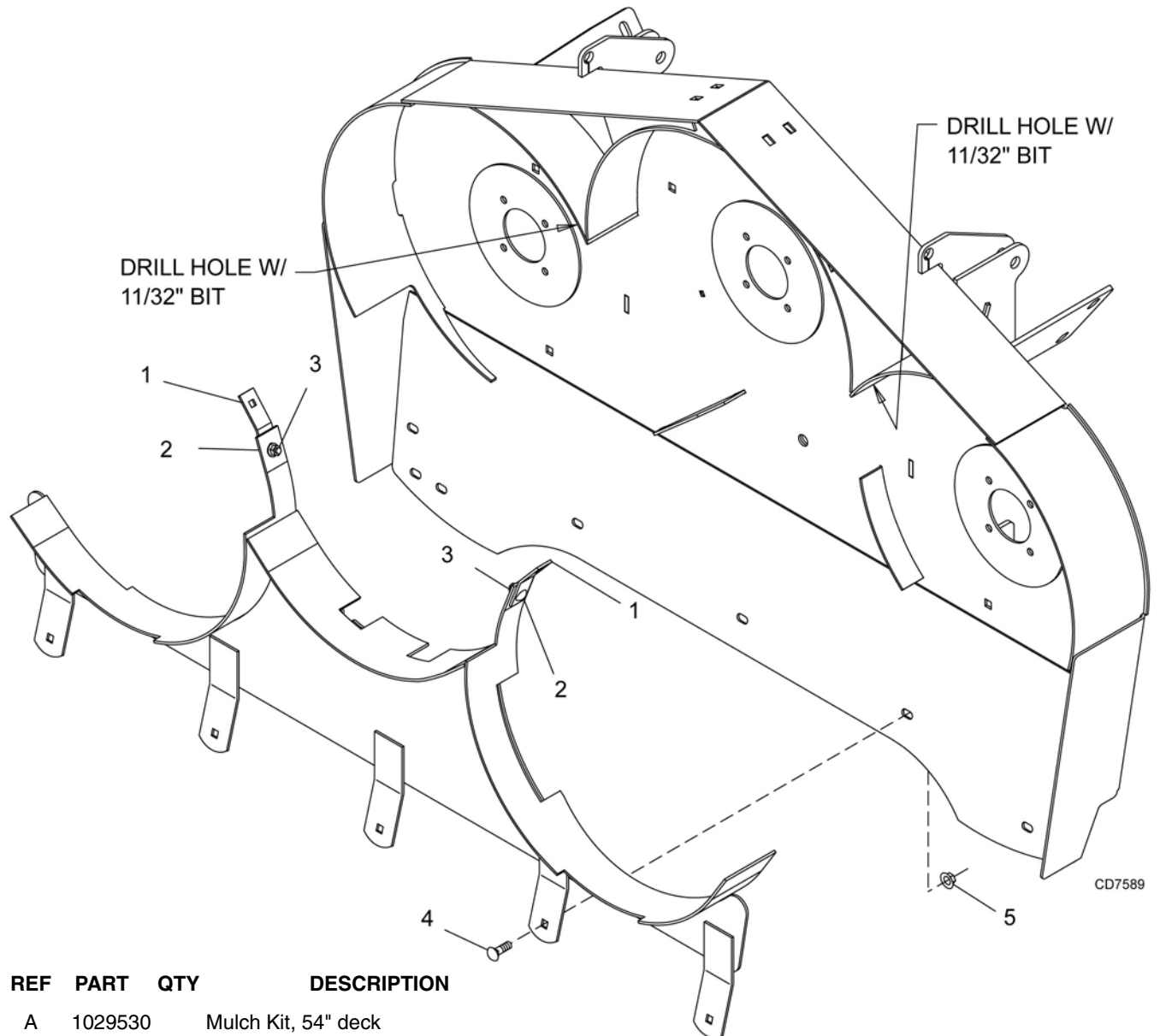
REF	PART	QTY	DESCRIPTION
A	1008038		Chain shield assembly
1	1007854	1	1/4 Pin
2	4763	49	3-Link 1/4 proof chain
3	1008037	1	Chain shield plate
4	22086	5	Sleeve 1/2 x 3/4 x 1/2
5	24890*	5	3/8 NC x 1-1/4 Carriage bolt
6	14350*	5	3/8 NC Flanged locknut
* Standard hardware, obtain locally			

## HYDRAULIC RELEASE KIT (OPTIONAL)



REF	PART	QTY	DESCRIPTION
A	1029535		Latch release kit
1	1029536	1	Release base
2	1029537	1	Release slide
3	29547	1	Hydraulic cylinder 3 x 8
4	24512	2	Spring, extension 8-1/4
5	8345	1	Pin, 1 x 4.08 headless
6	8347	2	Pin, 1 x 5.08 headless
7	1285	*	Cotter pin, 1/4 x 1-1/2
8	11893	1	Bushing, Pipe Reducing 1/2 x 1/4
9	10290	1	Elbow, 90 Deg 3/32 Rstr 1/4 x 1/4
10	17628	1	Hose, HP 1/4 NPT x 108
11	11975	1	1/2 NPT Vent plug
12	832	*	1" Standard flat washer
13	11920	2	Washer, 1 x 1-7/8 x 1/4
* Standard hardware, obtain locally			

## MULCH KIT (OPTIONAL)



REF	PART	QTY	DESCRIPTION
A	1029530		Mulch Kit, 54" deck
1	75106	2	Support bracket, bent link .14 x 1.0 x 3.88
2	16148	*	5/16 NC x 3/4 Carriage bolt GR5
3	14139	*	5/16 NC Flange lock nut
4	6697	*	3/8 NC x 1 Carriage bolt GR5
5	14350	*	3/8 NC Flange lock nut

\* Standard hardware, obtain locally

# BOLT TORQUE CHART

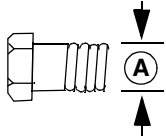
Always tighten hardware to these values unless a different torque value or tightening procedure is listed for a specific application.

Fasteners must always be replaced with the same grade as specified in the manual parts list.

Always use the proper tool for tightening hardware: SAE for SAE hardware and Metric for metric hardware.

Make sure fastener threads are clean and you start thread engagement properly.

All torque values are given to specifications used on hardware defined by SAE J1701 MAR 99 & J1701M JUL 96.



## SAE SERIES TORQUE CHART



**SAE Grade 2  
(No Dashes)**

SAE Bolt Head  
Identification

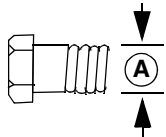


**SAE Grade 5  
(3 Radial Dashes)**



**SAE Grade 8  
(6 Radial Dashes)**

Ⓐ Diameter (Inches)	Wrench Size	MARKING ON HEAD					
		SAE 2		SAE 5		SAE 8	
		lbs-ft	N-m	lbs-ft	N-m	lbs-ft	N-m
1/4"	7/16"	6	8	10	13	14	18
5/16"	1/2"	12	17	19	26	27	37
3/8"	9/16"	23	31	35	47	49	67
7/16"	5/8"	36	48	55	75	78	106
1/2"	3/4"	55	75	85	115	120	163
9/16"	13/16"	78	106	121	164	171	232
5/8"	15/16"	110	149	170	230	240	325
3/4"	1-1/8"	192	261	297	403	420	569
7/8"	1-5/16"	306	416	474	642	669	907
1"	1-1/2"	467	634	722	979	1020	1383



## METRIC SERIES TORQUE CHART



**Metric  
Grade 8.8**

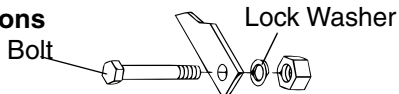
Metric Bolt Head  
Identification



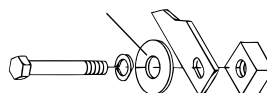
**Metric  
Grade 10.9**

Ⓐ Diameter & Thread Pitch (Millimeters)	Wrench Size	COARSE THREAD				FINE THREAD				Ⓐ Diameter & Thread Pitch (Millimeters)
		MARKING ON HEAD				MARKING ON HEAD				
		Metric 8.8		Metric 10.9		Metric 8.8		Metric 10.9		
		N-m	lbs-ft	N-m	lbs-ft	N-m	lbs-ft	N-m	lbs-ft	
6 x 1.0	10 mm	8	6	11	8	8	6	11	8	6 x 1.0
8 x 1.25	13 mm	20	15	27	20	21	16	29	22	8 x 1.0
10 x 1.5	16 mm	39	29	54	40	41	30	57	42	10 x 1.25
12 x 1.75	18 mm	68	50	94	70	75	55	103	76	12 x 1.25
14 x 2.0	21 mm	109	80	151	111	118	87	163	120	14 x 1.5
16 x 2.0	24 mm	169	125	234	173	181	133	250	184	16 x 1.5
18 x 2.5	27 mm	234	172	323	239	263	194	363	268	18 x 1.5
20 x 2.5	30 mm	330	244	457	337	367	270	507	374	20 x 1.5
22 x 2.5	34 mm	451	332	623	460	495	365	684	505	22 x 1.5
24 x 3.0	36 mm	571	421	790	583	623	459	861	635	24 x 2.0
30 x 3.0	46 mm	1175	867	1626	1199	1258	928	1740	1283	30 x 2.0

### Typical Washer Installations



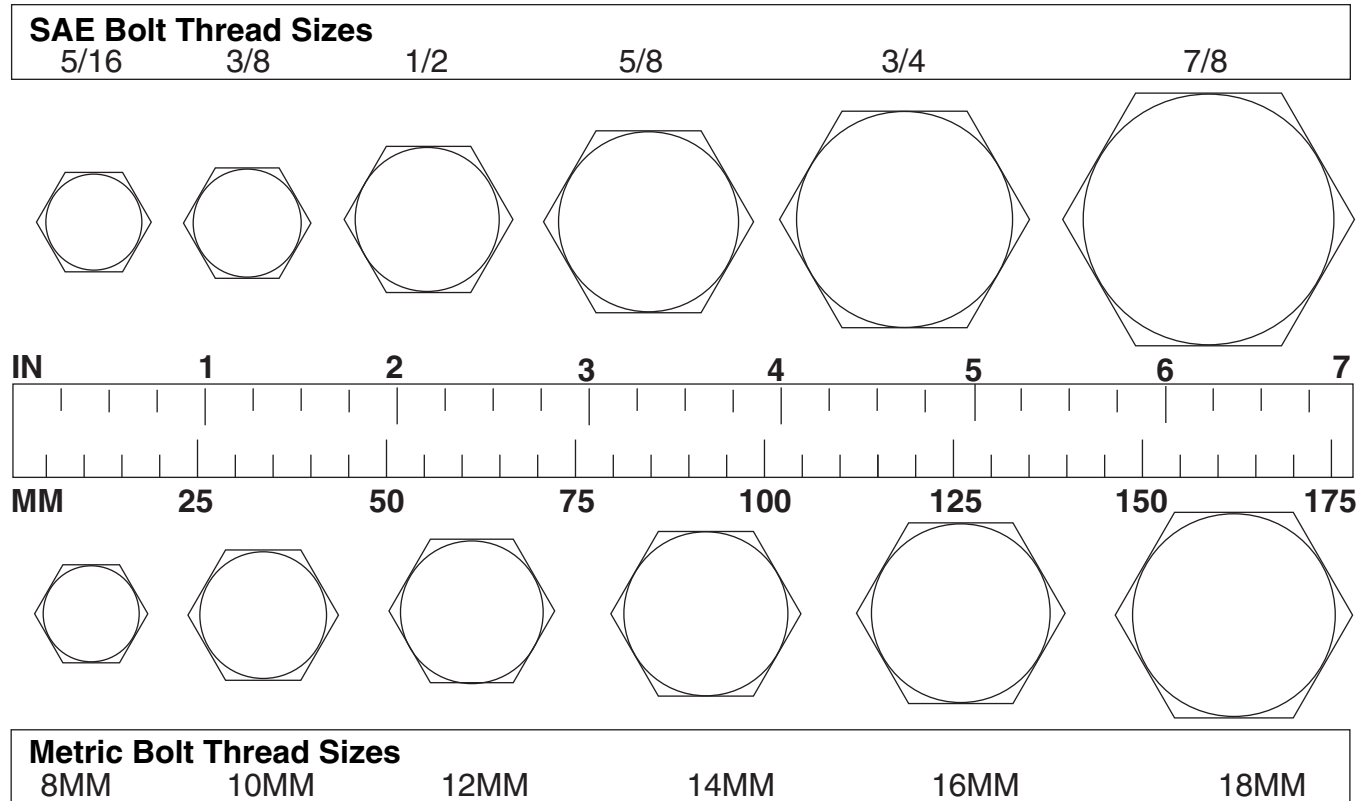
### Flat Washer



8/9/00

# BOLT SIZE CHART

**NOTE:** Chart shows bolt thread sizes and corresponding head (wrench) sizes for standard SAE and metric bolts.



## ABBREVIATIONS

AG ..... Agriculture  
 ASABE..... American Society of Agricultural & Biological Engineers (formerly ASAE)  
 ASAE ..... American Society of Agricultural Engineers  
 ATF ..... Automatic Transmission Fluid  
 BSPP ..... British Standard Pipe Parallel  
 BSPTM ..... British Standard Pipe Tapered Male  
 CV ..... Constant Velocity  
 CCW ..... Counter-Clockwise  
 CW..... Clockwise  
 F ..... Female  
 FT ..... Full Thread  
 GA ..... Gauge  
 GR (5, etc.) ..... Grade (5, etc.)  
 HHCS ..... Hex Head Cap Screw  
 HT ..... Heat-Treated  
 JIC ..... Joint Industry Council 37° Degree Flare  
 LH ..... Left Hand  
 LT ..... Left  
 m..... Meter  
 mm..... Millimeter  
 M..... Male

MPa..... Mega Pascal  
 N..... Newton  
 NC ..... National Coarse  
 NF ..... National Fine  
 NPSM..... National Pipe Straight Mechanical  
 NPT ..... National Pipe Tapered  
 NPT SWF ..... National Pipe Tapered Swivel Female  
 ORBM ..... O-Ring Boss - Male  
 P..... Pitch  
 PBY ..... Power-Beyond  
 psi..... Pounds per Square Inch  
 PTO ..... Power Take Off  
 QD ..... Quick Disconnect  
 RH ..... Right Hand  
 ROPS ..... Roll-Over Protective Structure  
 RPM ..... Revolutions Per Minute  
 RT ..... Right  
 SAE ..... Society of Automotive Engineers  
 UNC ..... Unified Coarse  
 UNF ..... Unified Fine  
 UNS..... Unified Special

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# WARRANTY

(All Models Except Mow'n Machine™ Zero-Turn Mowers and Woods Boundary™ Utility Vehicles)

Please Enter Information Below and Save for Future Reference.

Date Purchased: \_\_\_\_\_

From (Dealer): \_\_\_\_\_

Model Number: \_\_\_\_\_

Serial Number: \_\_\_\_\_

Woods Equipment Company ("WOODS") warrants this product to be free from defect in material and workmanship. Except as otherwise set forth below, the duration of this Warranty shall be for TWELVE (12) MONTHS COMMENCING ON THE DATE OF DELIVERY OF THE PRODUCT TO THE ORIGINAL PURCHASER.

All current model loaders and backhoes are warranted for two (2) years from the date of delivery to the original purchaser.

The warranty periods for specific parts or conditions are listed below:

Part or Condition Warranted	Model Number	Duration (from date of delivery to the original purchaser)
Gearbox components	BW1260, BW1620, BW1800, BW2400	8 years
	BW240HD, BW180HD, BW180HB, BW126HB	7 years
	BB48X, BB60X, BB72X, BB84X, BB600X, BB720X, BB840X, BB6000X, BB7200X, BB8400X, DS1260, DSO1260, DS1440, TS1680, BW126-3, BW180-3, BW240	6 years
	PHD25, PHD35, PHD65, PHD95, 2162, 3240, DS96, DS120, RCC42, RM550-2, RM660-2, RM990-3, PRD6000, PRD7200, PRD8400, 7144RD-2, 9180RD-2, 9204RD-2, S15CD, S20CD, S22CD, S25CD, S27CD, BW180LH	5 years
	RDC54, RD60, RD72, TBW150C	3 years (1 year if used in rental or commercial applications)
Blade spindles	RM550-2, RM660-2, RM990-3, PRD6000, PRD7200, PRD8400, 7144RD-2, 9180RD-2, 9204RD-2	3 years
Rust-through	BB600, BB720, BB840, BB6000, BB7200, BB8400, BW126-3, BW126HB, BW180-3, BW180HB, BW180HD, BW1260, BW1800, BW240, BW240HD, 2162, 3240, DS1260, DSO1260, DS1440, TS1680	10 years

Under no circumstances will this Warranty apply in the event that the product, in the good faith opinion of WOODS, has been subjected to improper operation, improper maintenance, misuse, or an accident. This Warranty does not apply in the event that the product has been materially modified or repaired by someone other than WOODS, a WOODS authorized dealer or distributor, and/or a WOODS authorized service center. This Warranty does not cover normal wear or tear, or normal maintenance items. This Warranty also does not cover repairs made with parts other than those obtainable through WOODS.

This Warranty is extended solely to the original purchaser of the product. Should the original purchaser sell or otherwise transfer this product to a third party, this Warranty does not transfer to the third party purchaser in any way. There are no third party beneficiaries of this Warranty.

WOODS makes no warranty, express or implied, with respect to engines, batteries, tires or other parts or accessories not manufactured by WOODS. Warranties for these items, if any, are provided separately by their respective manufacturers.

WOODS' obligation under this Warranty is limited to, at WOODS' option, the repair or replacement, free of charge, of the product if WOODS, in its sole discretion, deems it to be defective or in noncompliance with this Warranty. **The product must be returned to WOODS with proof of purchase within thirty (30) days after such defect or noncompliance is discovered or should have been discovered, routed through the dealer and distributor from whom the purchase was made, transportation charges prepaid.** WOODS shall complete such repair or replacement within a reasonable time after WOODS receives the product. THERE ARE NO OTHER REMEDIES UNDER THIS WARRANTY. THE REMEDY OF REPAIR OR REPLACEMENT IS THE SOLE AND EXCLUSIVE REMEDY UNDER THIS WARRANTY.

THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE OF THIS WARRANTY. WOODS MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, AND WOODS SPECIFICALLY DISCLAIMS ANY IMPLIED WARRANTY OF MERCHANTABILITY AND/OR ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

**WOODS shall not be liable for any incidental or consequential losses, damages or expenses, arising directly or indirectly from the product, whether such claim is based upon breach of contract, breach of warranty, negligence, strict liability in tort or any other legal theory.** Without limiting the generality of the foregoing, Woods specifically disclaims any damages relating to (i) lost profits, business, revenues or goodwill; (ii) loss of crops; (iii) loss because of delay in harvesting; (iv) any expense or loss incurred for labor, supplies, substitute machinery or rental; or (v) any other type of damage to property or economic loss.

This Warranty is subject to any existing conditions of supply which may directly affect WOODS' ability to obtain materials or manufacture replacement parts.

No agent, representative, dealer, distributor, serviceperson, salesperson, or employee of any company, including without limitation, WOODS, its authorized dealers, distributors, and service centers, is authorized to alter, modify, or enlarge this Warranty. Answers to any questions regarding warranty service and locations may be obtained

## Woods Equipment Company

2606 South Illinois Route 2  
Post Office Box 1000  
Oregon, Illinois 61061 USA

800-319-6637 tel  
800-399-6637 fax  
www.WoodsEquipment.com

# WOODS®

**ALITEC™**

**BMP®**

**CENTRAL FABRICATORS®**

**GANNON®**

**GILL®**

**WAIN-ROY®**

**WOODS®**





## WARRANTY

(Replacement Parts For All Models Except Mow'n Machine™  
Zero-Turn Mowers and Woods Boundary™ Utility Vehicles)

Woods Equipment Company ("WOODS") warrants this product to be free from defect in material and workmanship for a period of ninety (90) days from the date of delivery of the product to the original purchaser with the exception of V-belts, which will be free of defect in material and workmanship for a period of 12 months.

Under no circumstances will this Warranty apply in the event that the product, in the good faith opinion of WOODS, has been subjected to improper operation, improper maintenance, misuse, or an accident. This Warranty does not cover normal wear or tear, or normal maintenance items.

This Warranty is extended solely to the original purchaser of the product. Should the original purchaser sell or otherwise transfer this product to a third party, this Warranty does not transfer to the third party purchaser in any way. There are no third party beneficiaries of this Warranty.

WOODS' obligation under this Warranty is limited to, at WOODS' option, the repair or replacement, free of charge, of the product if WOODS, in its sole discretion, deems it to be defective or in noncompliance with this Warranty. **The product must be returned to WOODS with proof of purchase within thirty (30) days after such defect or noncompliance is discovered or should have been discovered, routed through the dealer and distributor from whom the purchase was made, transportation charges prepaid.** WOODS shall complete such repair or replacement within a reasonable time after WOODS receives the product. THERE ARE NO OTHER REMEDIES UNDER THIS WARRANTY. THE REMEDY OF REPAIR OR REPLACEMENT IS THE SOLE AND EXCLUSIVE REMEDY UNDER THIS WARRANTY.

THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE OF THIS WARRANTY. WOODS MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, AND WOODS SPECIFICALLY DISCLAIMS ANY IMPLIED WARRANTY OF MERCHANTABILITY AND/OR ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

**WOODS shall not be liable for any incidental or consequential losses, damages or expenses, arising directly or indirectly from the product, whether such claim is based upon breach of contract, breach of warranty, negligence, strict liability in tort or any other legal theory.** Without limiting the generality of the foregoing, Woods specifically disclaims any damages relating to (i) lost profits, business, revenues or goodwill; (ii) loss of crops; (iii) loss because of delay in harvesting; (iv) any expense or loss incurred for labor, supplies, substitute machinery or rental; or (v) any other type of damage to property or economic loss.

This Warranty is subject to any existing conditions of supply which may directly affect WOODS' ability to obtain materials or manufacture replacement parts.

No agent, representative, dealer, distributor, service person, salesperson, or employee of any company, including without limitation, WOODS, its authorized dealers, distributors, and service centers, is authorized to alter, modify, or enlarge this Warranty.

Answers to any questions regarding warranty service and locations may be obtained by contacting:

**ALITEC™**  
**BMP®**  
**CENTRAL FABRICATORS®**  
**GANNON®**  
**GILL®**  
**WAIN-ROY®**  
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